UNITED NATIONS

Framework Convention on Climate Change

Distr.
GENERAL

FCCC/CP/1999/7
16 February 2000

Original: ENGLISH

CONFERENCE OF THE PARTIES
Fifth session
Bonn, 25 October - 5 November 1999
Agenda items 4 (a) and 4 (h)

REVIEW OF THE IMPLEMENTATION OF COMMITMENTS AND OF OTHER PROVISIONS OF THE CONVENTION

UNFCCC guidelines on reporting and review

CONTENTS

		Page
	Introduction	3
I.	Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories	3
	Annex: Common reporting format	15
II.	Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications	80
III.	UNFCCC reporting guidelines on global climate change observing systems	101
IV.	UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention (Greenhouse gas review guidelines)	109

GE.00-60523

Page

Annexes

Decision

3/CP.5	Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories	115
4/CP.5	Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications	117
5/CP.5	Research and systematic observation	119
6/CP.5	Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention	121

Introduction

This document contains four sets of revised guidelines adopted by the Conference of the Parties at its fifth session. Sections I to IV[1] contain the guidelines themselves, whilst the annexes contain each of the related decisions of the Conference of the Parties (decisions 3/CP.5, 4/CP.5, 5/CP.5 and 6/CP.5). These texts have been compiled as a single document to facilitate ease of use by Parties.

I. GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

PART I:

UNFCCC REPORTING GUIDELINES ON ANNUAL INVENTORIES

A. Objectives

1. The objectives of the UNFCCC reporting guidelines on annual inventories are:

(a) To assist Annex I Parties in meeting their commitments under Articles 4 and 12 of the Convention and in preparing to meet possible future commitments under Articles 3, 5 and 7 of the Kyoto Protocol;

(b) To facilitate the process of considering annual national inventories and national inventories included in national communications, including the preparation of technical analysis and synthesis documentation; and

(c) To facilitate the process of verification and technical assessment and expert review of the inventory information.

B. Principles and definitions

2. National greenhouse gas inventories, referred to below only as inventories, should be transparent, consistent, comparable, complete and accurate.

---

[1] Section I: see document FCCC/SBSTA/1996/6/Add.1
Section II: see document FCCC/CP/1999/L.3/Add.1
Section III: see document FCCC/CP/1999/L.4/Add.1
Section IV: see document FCCC/CP/1999/L.11/Add.1

3. Inventories should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 7 below, and any *good practices*[2] agreed upon by the COP at a future session.

4. In the context of these UNFCCC reporting guidelines on annual inventories:

Transparency means that the assumptions and methodologies used for an inventory should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information;

Consistency means that an inventory should be internally consistent in all its elements with inventories of other years. An inventory is consistent if the same methodologies are used for the base and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances referred to in paragraphs 10 and 11, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, taking into account any good practices;

Comparability means that estimates of emissions and removals reported by Parties in inventories should be comparable among Parties. For this purpose, Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories. The allocation of different source/sink categories should follow the split of the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, at the level of its summary and sectoral tables.

Completeness means that an inventory covers all sources and sinks, as well as all gases, included in the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories,[3] as well as other existing relevant source/sink categories which are specific to individual Parties, and therefore may not be included in the IPCC Guidelines. Completeness also means full geographic coverage of sources and sinks of a Party.[4]

---

[2] The Intergovernmental Panel on Climate Change (IPCC) is currently developing guidance on *good practices* as part of its work related to uncertainties in inventories. This guidance may be available for consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA) in 2000. Guidance on *good practices* may include, *inter alia*, advice on the choice of methodology, emission factors, activity data, and uncertainties, and on a series of quality assessment and quality control procedures which may be applied during the preparation of inventories.

[3] Hereinafter referred to as "the IPCC Guidelines".

[4] According to the instruments of ratification, acceptance, approval or accession of the Convention by a given Party.

Accuracy is a relative measure of the exactness of an emission or removal estimate. Estimates should be accurate in the sense that they are systematically neither over or under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies conforming to guidance on *good practices* should be used to promote *accuracy* in inventories.

C. Scope

5. These UNFCCC reporting guidelines on annual inventories cover the estimation and reporting of greenhouse gas emissions and removals of both annual inventories and inventories included in national communications, as specified by decision 11/CP.4 and other relevant decisions of the COP.

D. Base year

6. The year 1990 should be the base year for the estimation and reporting of inventories. According to the provisions of Article 4.6 of the Convention and decisions 9/CP.2 and 11/CP.4, the following Annex I Parties, that are undergoing the process of transition to a market economy, are allowed to use a base year or a period of years other than 1990, as follows:

Bulgaria:	to use 1988
Hungary:	to use the average of the years 1985 to 1987
Poland:	to use 1988
Romania:	to use 1989
Slovenia:	to use 1986

E. Methods

Methodology

7. Parties shall use the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, referred to below as the IPCC Guidelines, to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. In accordance with the IPCC Guidelines, Parties may use different methods (tiers) included in those guidelines, giving priority to those methods which are believed to produce the most accurate estimates, depending on the data available. In accordance with the IPCC Guidelines, Parties can also use national methodologies which they consider better able to reflect their national situation, provided that these methodologies are compatible with the IPCC Guidelines and are well documented.

8. The IPCC Guidelines offer a default methodology which includes default emission factors and in some cases default activity data. As these default data, factors and assumptions may not always be appropriate for specific national contexts, it is preferable that Parties use their

own national emission factors and activity data, where available, provided that they are developed in a manner consistent with any *good practices*, and considered to be more accurate, and the reporting of the emission and removal estimates and their underlying data is transparent.

Good practices

9. When preparing inventories, Parties should apply any *good practices* agreed upon by the COP, in order to improve transparency, consistency, comparability, completeness and accuracy.

Recalculations

10. The purpose of all recalculations should be the improvement of accuracy and/or completeness. Recalculations have to ensure consistency of the time-series. The inventories of an entire time-series, including the base year and all subsequent years for which inventories have been reported, should be estimated using the same methodologies, and the underlying activity data and emission factors should be obtained and used in a consistent manner. Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Parties should recalculate inventories for the base and subsequent years.

11. However, in some cases activity data may be missing for some historical years, including the base year. In this case, emissions or removals for these years may need to be recalculated with alternative methodologies. In these instances, Parties should demonstrate that the time-series is consistent. The alternative methodologies should be documented in a transparent manner, taking into account any *good practices*.

Uncertainties

12. Parties should estimate the uncertainties of their inventories using the best methodologies available to them, taking account of any *good practices*.

F. Reporting

1. General guidance

Estimates of emissions and removals

13. Article 12.1(a) of the Convention requires that each Party shall communicate to the COP, through the secretariat, *inter alia*, a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. At a minimum, inventories shall contain information on the following six greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulphur hexafluoride (SF_6). Parties should report emissions and removals of any other greenhouse gases whose 100-year global warming potential (GWP) values

have been identified by the IPCC and adopted by the COP. Parties should also provide information on the following indirect greenhouse gases: carbon monoxide (CO), nitrogen oxides (NO_x), and non-methane volatile organic compounds (NMVOCs). Parties are encouraged to provide information on sulphur oxides (SO_x).

14. Greenhouse gas emissions and removals should be presented on a gas-by-gas basis in units of mass with emissions by sources listed separately from removals by sinks, except in cases where it may be technically impossible to separate information on sources and sinks in the areas of land-use, land-use change and forestry. For HFCs and PFCs, emissions should be reported for each relevant chemical in the category on a disaggregated basis except in cases where paragraph 19 applies.

15. In addition, consistent with decision 2/CP.3, Parties should report aggregate emissions and removals of greenhouse gases, expressed in CO_2 equivalent terms at summary inventory level,[5] using GWP values provided by the IPCC in its Second Assessment Report, referred to below as 1995 IPCC GWP values, based on the effects of greenhouse gases over a 100-year time horizon. A list of these values is given in table 1 at the end of this document. Table 1 will be amended to include any additional greenhouse gases and their 100-year GWP values, once the GWP values have been adopted by the COP.

16. Consistent with decision 2/CP.3, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical (for example, HFC-134a) and source category in units of mass and in CO_2 equivalents. Parties should make every effort to develop the necessary sources of data for reporting actual emissions. For the source categories where the concept of potential emissions applies, and Parties do not yet have the necessary data to calculate actual emissions, Parties should report disaggregated potential emissions. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability.

17. Parties are strongly encouraged to also report emissions and removals of greenhouse gases for which 100-year GWP values are available, but not yet adopted by the COP. These emissions and removals should be reported separately from national totals. The GWP value and reference should be indicated.

18. In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions, based upon fuel sold to ships or aircraft engaged in international transport, should not be included in national totals, but reported separately. Parties should also report emissions from international aviation and marine bunker fuels as two separate entries in their inventories.

---

[5] CO_2 equivalent emissions should be provided at a level of disaggregation similar to summary table 7A of the IPCC Guidelines.

19. Emissions and removals should be reported on the most disaggregated level of each source/sink category, taking into account that a minimum level of aggregation may be required to protect confidential business and military information.

Recalculations

20. Recalculations of previously submitted estimates of emissions and removals as a result of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used or the inclusion of new sources or sinks, which have existed since the base year but were not previously reported, should be reported for the base year and all subsequent years, up to the year in which the recalculations are made. Recalculations should result in an improvement in the accuracy and completeness of the inventory and ensure the consistency of the time-series. In this regard, Parties should report justifications for these changes. The information on the procedures used for performing the recalculations, changes in the calculation methods, emission factors and activity data used, and inclusion of sources or sinks, should be documented in a transparent manner, indicating the relevant changes in each source or sink category where these changes have taken place.

Completeness

21. Where methodological or data gaps in inventories exist, information on these gaps should be presented in a transparent manner. Parties should clearly indicate the sources and sinks not considered in their inventories but included in the IPCC Guidelines, and explain the reason for the exclusion. In addition, Parties should use the standard indicators presented below to fill the blanks in all the tables of an inventory. This approach facilitates assessment of the completeness of an inventory. The standard indicators are as follows:

(a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;

(b) "NE" (not estimated) for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO_2, CH_4, N_2O, HFCs, PFCs, or SF_6, the Party should indicate, using the completeness table of the common reporting format, why emissions could not be estimated;

(c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which "NA" is applicable are shaded, they do not need to be filled in;

(d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate, using the completeness table of the common reporting format, where in the inventory the emissions or

removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;

(e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 above; and

(f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which therefore appear as zero after rounding. The amount should still be included in the national totals and any relevant subtotals.[6,7] In the sectoral background tables of the common reporting format Parties should provide data as detailed as methods allow.

22. If Parties estimate emissions and removals from country-specific sources or sinks, or of gases, which are not part of the IPCC Guidelines, they should explicitly describe what source/sink categories or gases these are, as well as what methodologies, emission factors and activity data have been used for their estimation.

Verification[8]

23. In accordance with the IPCC Guidelines, and for verification purposes, Parties should compare their national estimates of carbon dioxide emissions from *fuel combustion* with those estimates obtained using the IPCC reference approach, and report on them in annual inventories. Parties are also encouraged to report on any peer review of their inventory conducted nationally.

Uncertainties[9]

24. When reporting greenhouse gas emission and removal inventory data, the level of uncertainty associated with these data and their underlying assumptions should be indicated. The methodologies used for estimating uncertainties should be reported in a transparent manner. Parties are encouraged to report quantitative information on uncertainties, where this is available.

---

[6] The level of detail appropriate to very small source/sink categories is under consideration by the IPCC in its work on *good practices* and Parties should use any guidance which is subsequently agreed by the COP.

[7] With this procedure it is possible that sums of all sectoral tables will differ slightly from sums of summary tables because of rounding effects.

[8] The SBSTA may wish to consider this issue when more data are available or on completion of the development of guidance on *good practices* by the IPCC and, as appropriate, expand this section in any subsequent revisions to these guidelines.

[9] More rigorous requirements for reporting uncertainties may be adopted by the COP once the ongoing work of the IPCC on this matter is completed.

Adjustments

25. Inventories are to be reported without adjustments related, for example, to climate variations or trade patterns of electricity. If Parties, in addition, carry out such adjustments to inventory data, they should be reported separately and in a transparent manner, with clear indications of the method followed.

26. Adjustments are regarded as important information in relation to the monitoring of emission and removal trends and the performance of national policies and measures. Individual Parties may choose whether adjustments are applied, in addition to reporting unadjusted inventory data, and if so, indicate which methods are chosen. Parties are further encouraged to share with others their experience with the application of adjustments.

2. Common reporting format

27. Parties shall submit annually to the Conference of the Parties, through the secretariat, the information required under the common reporting format as contained in the annex to these guidelines. This information shall be submitted on an annual basis for the last but one year prior to the year of submission, in accordance with paragraph 5. It should be formally submitted in both electronic form and hard copy. The common reporting format is part of the national inventory report referred to in section 3 below.

28. The common reporting format is a standardized format for reporting estimates of greenhouse gas emissions and removals and other relevant information. It will be provided to Parties by the secretariat and will also be available on the UNFCCC web site. The common reporting format allows for the improved handling of electronic submissions and facilitates the processing of inventory information and the preparation of useful technical analysis and synthesis documentation.

29. The common reporting format consists of:

(a) Summary and sectoral tables;

(b) Sectoral background data tables for reporting of aggregate emission factors and activity data;

(c) The IPCC worksheet 1-1 containing estimates of CO_2 emissions from fuel combustion using the IPCC reference approach and a table for comparing estimates under this reference approach with national estimates, as well as providing explanations of any significant differences;

(d) Tables for reporting, *inter alia*, aggregate CO_2 equivalent emissions and removals, recalculations, completeness of the inventory, uncertainty, feedstocks and non-energy use of

fuels, international bunkers and multilateral operations, emission trends, and a check-list of the main inventory information requested by these UNFCCC reporting guidelines on annual inventories.

30. The common reporting format follows the source/sink category split of the IPCC sectoral tables. It provides a minimum set of information on methods, aggregate emission factors, and activity data, as well as relevant assumptions that underlie the estimates given in the sectoral tables.

31. The information provided by the common reporting format is aimed at enhancing the comparability and transparency of inventories by facilitating, *inter alia*, activity data and aggregate emission factor cross-comparisons among Parties, and easy identification of possible mistakes, misunderstandings and omissions in the inventories.

3. National inventory report

32. Parties shall submit to the Conference of the Parties, through the secretariat, a national inventory report containing detailed and complete information on their inventories for all years from the base year to the year of the current annual inventory submission, in order to ensure the transparency of the inventory.

33. The national inventory report shall be submitted annually in its entirety to the Conference of the Parties, through the secretariat, in accordance with relevant decisions of the COP, either as a printed document or electronically and should be updated annually to reflect changes. It should include:

(a) The annual inventory information, submitted in accordance with paragraph 27, for all years from the base year[10] to the year of the current annual inventory submission;

(b) Calculation sheets[11] or equivalent database information on detailed inventory calculations in each sector, for all years from the base year to the year of the current annual inventory submission, containing, *inter alia*, disaggregated national emission factors and activity data underlying the estimates;

---

[10] According to the provisions of Article 4.6 of the Convention and decisions 9/CP.2 and 11/CP.4, some Parties with economies in transition are allowed to use base years other than 1990, as mentioned in paragraph 7 above.

[11] Calculation sheets or equivalent database information according to the IPCC Guidelines, CORINAIR or national methods.

(c) A description of the specific methodologies and assumptions used in each sector, including an indication of the level of complexity (IPCC tiers) applied and a description of any national methodology used by the Party, as well as information on anticipated future improvements in methodologies;

(d) References or sources of information related to methodologies, emission factors and activity data, as well as the rationale for their selection;

(e) Information on assumptions and conventions underlying the emission and removal estimates, as well as the rationale for their selection;

(f) Specific information on feedstocks and bunkers:

(i) With regard to possible double counting or non-counting of emissions, Parties should indicate whether feedstocks have been accounted for in the inventory, and if so, how they have been accounted for;

(ii) Regarding the reporting of emissions from bunker fuels, Parties should explain how they distinguish between domestic marine and aviation emissions, which are to be included in national totals, and international bunker emissions;

(g) Information on any recalculations related to previously submitted inventory data, as requested in paragraph 20 above;

(h) Information on uncertainties, as requested in paragraph 24 above;

(i) Information on quality assurance/quality control (QA/QC) procedures implemented.

(j) A separate section clearly identifying changes with respect to the previous years, including the changes in methodologies, sources of information and assumptions, as well as changes in response to the review process;

34. Parties shall publish their national inventory report. Parties may fulfil that obligation by keeping the national inventory report in its entirety on their national web sites.

G. Record keeping

35. Parties should gather and archive all relevant inventory information for each year, including all disaggregated emission factors, activity data and documentation about how these factors and data have been generated and aggregated for the reporting of the inventory. This

information should allow the reconstruction of the inventory, *inter alia*, by the expert review teams. Inventory information should be archived from the base year, including the corresponding data on recalculations applied. The paper trail should enable estimates of emissions and removals to be traced back to the original disaggregated emission factors and activity data. This information should also facilitate the timely process of clarifying inventory data when the secretariat prepares annual compilations of inventories or assesses methodological issues. Parties are encouraged to collect and gather the information in a single national inventory facility or to, at least, keep the number of facilities to a minimum.

H. Updating of the guidelines

36. These guidelines for national communications shall be reviewed and revised, as appropriate, in accordance with decisions of the Conference of the Parties on this matter.

I. Language

37. The national inventory report shall be submitted in one of the official languages of the United Nations. Annex I Parties are also encouraged to submit, where relevant, a translation of the national inventory report into English.

Table 1: 1995 IPCC global warming potential (GWP) values[12] based on the effects of greenhouse gases over a 100-year time horizon

Greenhouse gas	Chemical formula	1995 IPCC GWP
Carbon dioxide	CO_2	1
Methane	CH_4	21
Nitrous oxide	N_2O	310
Hydrofluorocarbons (HFCs)		
HFC-23	CHF_3	11 700
HFC-32	CH_2F_2	650
HFC-41	CH_3F	150
HFC-43-10mee	$C_5H_2F_{10}$	1 300
HFC-125	C_2HF_5	2 800
HFC-134	$C_2H_2F_4$ (CHF_2CHF_2)	1 000
HFC-134a	$C_2H_2F_4$ (CH_2FCF_3)	1 300
HFC-152a	$C_2H_4F_2$ (CH_3CHF_2)	140
HFC-143	$C_2H_3F_3$ (CHF_2CH_2F)	300
HFC-143a	$C_2H_3F_3$ (CF_3CH_3)	3 800
HFC-227ea	C_3HF_7	2 900
HFC-236fa	$C_3H_2F_6$	6 300
HFC-245ca	$C_3H_3F_5$	560
Perfluorocarbons		
Perfluoromethane	CF_4	6 500
Perfluoroethane	C_2F_6	9 200
Perfluoropropane	C_3F_8	7 000
Perfluorobutane	C_4F_{10}	7 000
Perfluorocyclobutane	c-C_4F_8	8 700
Perfluoropentane	C_5F_{12}	7 500
Perfluorohexane	C_6F_{14}	7 400
Sulphur hexafluoride	SF_6	23 900

[12] As provided by the IPCC in its Second Assessment Report.

Annex to the UNFCCC reporting guidelines on annual inventories:

COMMON REPORTING FORMAT

Notes on the common reporting format

1. This common reporting format consists of summary, reporting and overview tables from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines), plus newly developed sectoral background tables. Users of IPCC software and of the software for converting from CORINAIR to IPCC formats should be aware that a few small additions have been made to the tables taken from the IPCC Guidelines.

2. Some sectoral background tables call for the calculation of *implied emission factors*. These are top-down ratios between the Party's emissions estimate and aggregate activity data. The implied emission factors are intended solely for purposes of comparison. They will not necessarily be the emission factors actually used in the original emissions estimate, unless of course this was a simple multiplication based on the same aggregate activity data used to calculate the implied emission factor.

3. Consistent with the IPCC Guidelines, memo items, such as emissions estimates from international marine and aviation bunker fuels, should be reported in the appropriate tables, but not included in national totals.

4. Parties should use the documentation boxes provided at the foot of the sectoral background tables to improve clarity.

5. Parties should complete all cells calling for emissions or removals estimates, activity data or emission factors. The following standard indicators should be used where data are not entered.

(a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;

(b) "NE" (not estimated) for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO_2, CH_4, N_2O, HFCs, PFCs, or SF_6, the Party should indicate, using the completeness table 9, why emissions could not be estimated;

(c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which "NA" is applicable are shaded, they do not need to be filled in;

(d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate using the completeness table 9, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;

(e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 of the UNFCCC reporting guidelines on annual inventories;

(f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which would therefore appear as zero after rounding. The amount should still be included in the relevant subtotals. In the sectoral background tables, Parties should provide data as detailed as methods allow.

6. Parties should complete the date in the additional information boxes. Where the information called for is inappropriate because of the methodological tier used by the Party, the corresponding cells should be completed using the indicator "NA".

7. Table 5 (the land-use change and forestry sectoral report) should be completed by Parties. The corresponding sectoral background tables 5 A-D follow the IPCC Guidelines and should be completed by Parties that use IPCC default methods. The species and ecosystem types given in the background tables are examples and may be changed by Parties to better describe national circumstances. Parties which do not use the sectoral background tables 5 A-D should complete alternative formats, when they are available.

8. Neither the order nor the notation of columns, rows or cells should be changed in the tables because this will complicate data compilation. Any additions to the existing disaggregation of source and sink categories should be made using the spare rows and columns provided. Additional changes that are made should be clearly indicated both by using a red font and by underlining the information contained in changed cells.

9. Where recalculations of previously submitted data are necessary for the reasons set out in paragraphs 10 and 11 of the UNFCCC reporting guidelines on annual inventories, Parties should complete recalculation table 8a for every year from the base year, and table 8b. Parties should also complete the other tables of the common reporting format for the base year which have changed due to the recalculations.

LIST OF TABLES

		Page
Summary tables		
Summary 1.A	Summary report for national greenhouse gas inventories (IPCC Table 7A)	19 - 21
Summary 1.B	Short summary report for national greenhouse gas inventories (IPCC Table 7B)	22
Summary 2	Summary report for CO_2 equivalent emissions	23
Summary 3	Summary report for methods and emission factors used	24 - 25
Energy		
Table 1	Sectoral report for energy	26 - 27
	Sectoral background data for energy	
Table 1.A(a)	Fuel combustion activities (Sectoral approach)	28 - 31
Table 1.A(b)	CO_2 from fuel combustion activities - Reference approach (IPCC Worksheet 1-1)	32
Table 1.A(c)	Comparison of CO_2 emissions from fuel combustion	33
Table 1.A(d)	Feedstocks and non-energy use of fuels	34
Table 1.B.1	Fugitive emissions from solid fuels	35
Table 1.B.2	Fugitive emissions from oil and natural gas	36
Table 1.C	International bunkers and multilateral operations	37
Industrial processes		
Table 2(I)	Sectoral report for industrial processses	38 - 39
	Sectoral background data for industrial processes	
Table 2(I).A-G	Emissions of CO_2, CH_4 and N_2O	40 - 41
Table 2(II)	Sectoral report for industrial processes - Emissions of HFCs, PFCs and SF_6	42 - 43
	Sectoral background data tables for industrial processes	
Table 2(II).C,E	Metal production; Production of halocarbons and SF_6	44
Table 2(II).F	Consumption of halocarbons and SF_6	45 - 46
Solvent and other product use		
Table 3	Sectoral report for solvent and other product use	47
Table 3.A-D	Sectoral background data for solvent and other product use	48

Agriculture

Table 4	Sectoral report for agriculture	49 - 50
	Sectoral background data for agriculture	
Table 4.A	Enteric fermentation	51
Table 4.B.(a)	CH_4 emissions from manure management	52
Table 4.B.(b)	N_2O emissions from manure management	53
Table 4.C	Rice cultivation	54
Table 4.D	Agricultural soils	55
Table 4.E	Prescribed burning of savannas	56
Table 4.F	Field burning of agricultural residues	57

Land-use change and forestry

Table 5	Sectoral report for land-use change and forestry	58
	Sectoral background data for land-use change and forestry	
Table 5.A	Changes in forest and other woody biomass stocks	59
Table 5.B	Forest and grassland conversion	60
Table 5.C	Abandonment of managed lands	61
Table 5.D	CO_2 emissions and removals from soil	62

Waste

Table 6	Sectoral report for waste	63
	Sectoral background data for waste	
Table 6.A	Solid waste disposal	64
Table 6.C	Waste incineration	64
Table 6.B	Wastewater handling	65

Other tables

Table 7	Overview table for national greenhouse gas inventories	66 - 68
Table 8(a)	Recalculation - Recalculated data	69 - 70
Table 8(b)	Recalculation - Explanatory information	71
Table 9	Completeness	72 - 73
Table 10	Emissions trends	74 - 78
Table 11	Check-list of reported inventory information	79

Explanatory note:

In order to avoid changes to the layout of the complex tables of the common reporting format, the tables have not been translated. The common reporting format is a standardized format to be used by Annex I Parties for reporting, electronically, estimates of greenhouse gas emissions and removals and any other relevant information.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)

Year :

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)				(Gg)					
Total National Emissions and Removals														
1. Energy														
A. Fuel Combustion — Reference Approach[2]														
A. Fuel Combustion — Sectoral Approach[2]														
1. Energy Industries														
2. Manufacturing Industries and Construction														
3. Transport														
4. Other Sectors														
5. Other														
B. Fugitive Emissions from Fuels														
1. Solid Fuels														
2. Oil and Natural Gas														
2. Industrial Processes														
A. Mineral Products														
B. Chemical Industry														
C. Metal Production														
D. Other Production[3]														
E. Production of Halocarbons and SF_6														
F. Consumption of Halocarbons and SF_6														
G. Other														

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach. Where possible, the calculations using the Sectoral approach should be used for estimating national totals. Do not include the results of both the Reference approach and the Sectoral approach in national totals.

[3] Other Production includes Pulp and Paper and Food and Drink Production.

Note: The numbering of footnotes to all tables containing more than one sheet continue to the next sheet. Common footnotes are given only once at the first point of reference.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 2 of 3)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs [1]		PFCs [1]		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)						(Gg)			
3. Solvent and Other Product Use														
4. Agriculture														
A. Enteric Fermentation														
B. Manure Management														
C. Rice Cultivation														
D. Agricultural Soils	[4]	[4]												
E. Prescribed Burning of Savannas														
F. Field Burning of Agricultural Residues														
G. Other														
5. Land-Use Change and Forestry	[5]	[5]												
A. Changes in Forest and Other Woody Biomass Stocks	[5]	[5]												
B. Forest and Grassland Conversion														
C. Abandonment of Managed Lands	[5]	[5]												
D. CO_2 Emissions and Removals from Soil	[5]	[5]												
E. Other														
6. Waste														
A. Solid Waste Disposal on Land	[6]													
B. Wastewater Handling														
C. Waste Incineration	[6]													
D. Other														
7. Other *(please specify)*														

[4] According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-Use Change and Forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils, either in the Agriculture sector, under D. Agricultural Soils or in the Land-Use Change and Forestry sector under D. Emissions and Removals from Soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by inserting explanatory footnotes in the corresponding cells of Summary 1.A and Summary 1.B. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table 8(a) (Recalculation - Recalculated data) and Table 10 (Emission trends).

[5] Please do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

[6] Note that CO_2 from Waste Disposal and Incineration source categories should only be included if it stems from non-biogenic or inorganic waste streams.

Year :

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs		PFCs		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)						(Gg)			
Memo Items: [1]														
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO_2 Emissions from Biomass														

[1] Memo items are not included in the national totals.

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)

Year :

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
						P	A	P	A	P	A				
		(Gg)				CO_2 equivalent (Gg)						(Gg)			
Total National Emissions and Removals															
1. Energy															
A. Fuel Combustion	Reference Approach[2]														
	Sectoral Approach[2]														
B. Fugitive Emissions from Fuels															
2. Industrial Processes															
3. Solvent and Other Product Use															
4. Agriculture[3]															
5. Land-Use Change and Forestry		[4]	[4]												
6. Waste															
7. Other															
Memo Items:															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach. Where possible, the calculations using the Sectoral approach should be used for estimating national totals. Do not include the results of both the Reference approach and the Sectoral approach in national totals.

[3] See footnote 4 to Summary 1.A.

[4] Please do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Total
	CO_2 equivalent (Gg)						
Total (Net Emissions) [2]							
1. Energy							
A. Fuel Combustion (Sectoral Approach)							
1. Energy Industries							
2. Manufacturing Industries and Construction							
3. Transport							
4. Other Sectors							
5. Other							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
2. Oil and Natural Gas							
2. Industrial Processes							
A. Mineral Products							
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF_6							
F. Consumption of Halocarbons and SF_6							
G. Other							
3. Solvent and Other Product Use							
4. Agriculture							
A. Enteric Fermentation							
B. Manure Management							
C. Rice Cultivation							
D. Agricultural Soils [3]							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues							
G. Other							
5. Land-Use Change and Forestry [1]							
6. Waste							
A. Solid Waste Disposal on Land							
B. Wastewater Handling							
C. Waste Incineration							
D. Other							
7. Other *(please specify)*							
Memo Items:							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] For CO_2 emissions from Land-Use Change and Forestry the net emissions are to be reported. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

[2] See footnote 4 to Summary 1.A of this common reporting format.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions / removals	CH_4	N_2O	Total emissions
Land-Use Change and Forestry	CO_2 equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks						
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO_2 Emissions and Removals from Soil						
E. Other						
Total CO_2 Equivalent Emissions from Land-Use Change and Forestry						

Total CO_2 Equivalent Emissions without Land-Use Change and Forestry [4]	
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry [4]	

[4] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED

Year :

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied[1)]	Emission factor[2)]	Method applied[1)]	Emission factor[2)]	Method applied[1)]	Emission factor[2)]	Method applied[1)]	Emission factor[2)]	Method applied[1)]	Emission factor[2)]	Method applied[1)]	Emission factor[2)]
1. Energy												
A. Fuel Combustion												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												

[1)] Use the following notation keys to specify the method applied: D (IPCC default), RA (Reference Approach), T1 (IPCC Tier 1), T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), T2 (IPCC Tier 2), T3 (IPCC Tier 3), C (CORINAIR), CS (Country Specific), M (Model). If using more than one method, enumerate the relevant methods. Explanations of any modifications to the default IPCC methods, as well as information on the proper use of methods per source category where more than one method is indicated, and explanations on the country specific methods, should be provided in the documentation box of the relevant Sectoral background data table.

[2)] Use the following notation keys to specify the emission factor used: D (IPCC default), C (CORINAIR), CS (Country Specific), PS (Plant Specific), M (Model). Where a mix of emission factors has been used, use different notations in one and the same cells with further explanation in the documentation box of the relevant Sectoral background data table.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED Year :

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied[1]	Emission factor[1]	Method applied[1]	Emission factor[1]	Method applied[1]	Emission factor[1]	Method applied[1]	Emission factor[1]	Method applied[1]	Emission factor[1]	Method applied[1]	Emission factor[1]
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Wastewater Handling												
C. Waste Incineration												
D. Other												
7. Other *(please specify)*												

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Energy							
A. Fuel Combustion Activities (Sectoral Approach)							
1. Energy Industries							
a. Public Electricity and Heat Production							
b. Petroleum Refining							
c. Manufacture of Solid Fuels and Other Energy Industries							
2. Manufacturing Industries and Construction							
a. Iron and Steel							
b. Non-Ferrous Metals							
c. Chemicals							
d. Pulp, Paper and Print							
e. Food Processing, Beverages and Tobacco							
f. Other *(please specify)*							
3. Transport							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other *(please specify)*							

Year :

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fisheries							
5. Other *(please specify)* [1]							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining							
b. Solid Fuel Transformation							
c. Other *(please specify)*							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Venting							
Flaring							
Other *(please specify)*							
Memo Items: [2]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] Include military fuel use under this category.

[2] Please do not include in energy totals.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fuel Combustion Activities - Sectoral Approach

(Sheet 1 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA Consumption (TJ)	(1)	IMPLIED EMISSION FACTORS (2) CO_2 (t/TJ)	CH_4 (kg/TJ)	N_2O (kg/TJ)	EMISSIONS CO_2 (Gg)	CH_4 (Gg)	N_2O (Gg)
1.A. FUEL COMBUSTION								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						(3)		
1.A.1. Energy Industries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						(3)		
a. Public Electricity and Heat Production								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						(3)		
b. Petroleum Refining								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						(3)		
c. Manufacture of Solid Fuels and Other Energy Industries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						(3)		

(1) Activity data should be calculated using net calorific values (NCV) as specified by the IPCC Guidelines. If gross calorific values (GCV) were used, please indicate this by placing a "G" in this column.

(2) Accurate estimation of CH_4 and N_2O emissions depends on combustion conditions, technology, and emission control policy, as well as fuel characteristics. Therefore, caution should be used when comparing the implied emission factors.

(3) Carbon dioxide emissions from biomass are reported under Memo Items. The content of the cells is not included in the totals.

Note: For the coverage of fuel categories, please refer to the IPCC Guidelines (Volume 1. Reporting Instructions - Common Reporting Framework, section 1.2, p. 1.19). If some derived gases (e.g. gas work gas, coke oven gas, blast gas, oxygen steel furnace gas, etc.) are considered, Parties should provide information on the allocation of these derived gases under the above fuel categories (liquid, solid, gaseous, biomass, other fuels) in the documentation box or using a footnote.

Year :

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Fuel Combustion Activities - Sectoral Approach

(Sheet 2 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[1]			EMISSIONS		
	Consumption	[1]	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)		(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.2 Manufacturing Industries and Construction								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								
a Iron and Steel								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								
b Non-Ferrous Metals								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								
c Chemicals								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								
d Pulp, Paper and Print								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								
e Food Processing, Beverages and Tobacco								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								
f Other *(please specify)*								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels						[1]		
Biomass								
Other Fuels								

Year :

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 3 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS		
	Consumption		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	[1]	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.3 Transport								
Gasoline								
Diesel								
Natural Gas								
Solid Fuels								
Biomass						[3]		
Other Fuels *(please specify)*								
a. Civil Aviation								
Aviation Gasoline								
Jet Kerosene								
b. Road Transportation								
Gasoline								
Diesel Oil								
Natural Gas								
Biomass						[3]		
Other Fuels *(please specify)*								
c. Railways								
Solid Fuels								
Liquid Fuels								
d. Navigation								
Coal								
Residual Oil								
Gas/Diesel Oil								
Other Fuels *(please specify)*								
e. Other Transportation								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								

Year :

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 4 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS		
	Consumption (TJ)	[1]	CO_2 (t/TJ)	CH_4 (kg/TJ)	N_2O (kg/TJ)	CO_2 (Gg)	CH_4 (Gg)	N_2O (Gg)
1.A.4 Other Sectors								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[3]		
Other Fuels								
a Commercial/Institutional								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[3]		
Other Fuels								
b Residential								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[3]		
Other Fuels								
c Agriculture/Forestry/Fisheries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[3]		
Other Fuels								
1.A.5 Other *(Not elsewhere specified)* [4]								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[3]		
Other Fuels								

[4] Include military fuel use under this category.

Documentation box:

TABLE I.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO_2 from Fuel Combustion Activities - Reference Approach (IPCC Worksheet 1-1)
(Sheet 1 of 1)

Year :

FUEL TYPES			Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor [1] (TJ/Unit)	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidized	Actual CO_2 emissions ($Gg\ CO_2$)
Liquid Fossil	Primary Fuels	Crude Oil														
		Orimulsion														
		Natural Gas Liquids														
	Secondary Fuels	Gasoline														
		Jet Kerosene														
		Other Kerosene														
		Shale Oil														
		Gas / Diesel Oil														
		Residual Fuel Oil														
		LPG														
		Ethane														
		Naphtha														
		Bitumen														
		Lubricants														
		Petroleum Coke														
		Refinery Feedstocks														
		Other Oil														
Liquid Fossil Totals																
Solid Fossil	Primary Fuels	Anthracite [2]														
		Coking Coal														
		Other Bit. Coal														
		Sub-bit. Coal														
		Lignite														
		Oil Shale														
		Peat														
	Secondary Fuels	BKB & Patent Fuel														
		Coke Oven/Gas Coke														
Solid Fuel Totals																
Gaseous Fossil		Natural Gas (Dry)														
Total																
Biomass total																
		Solid Biomass														
		Liquid Biomass														
		Gas Biomass														

[1] To convert quantities expressed in natural units to energy units, use net calorific values (NCV). If gross calorific values (GCV) are used in this table, please indicate this with a footnote
[2] If Anthracite is not separately available, include with Other Bituminous Coal

TABLE 1.A(c) COMPARISON OF CO_2 EMISSIONS FROM FUEL COMBUSTION
(Sheet 1 of 1)

Year :

FUEL TYPES	Reference approach		National approach [1]		Difference [2]	
	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (%)	CO_2 emissions (%)
Liquid Fuels (excluding international bunkers)						
Solid Fuels (excluding international bunkers)						
Gaseous Fuels						
Other [3]						
Total [3]						

[1] "National approach" is used to indicate the approach (if different from the Reference approach) followed by the Party to estimate its CO_2 emissions from fuel combustion reported in the national GHG inventory.

[2] Difference of the Reference approach over the National approach (i.e. difference = 100% x ((RA-NA)/NA), where NA = National approach and RA = Reference approach).

[3] Emissions from biomass are not included.

Note: In addition to estimating CO_2 emissions from fuel combustion by sector, Parties should also estimate these emissions using the IPCC Reference approach, as found in the IPCC Guidelines, Worksheet 1-1 (Volume 2, Workbook). The Reference approach is to assist in verifying the sectoral data. Parties should also complete the above tables to compare the alternative estimates, and if the emission estimates lie more than 2 percent apart, should explain the source of this difference in the documentation box provided.

Documentation box:

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Feedstocks and Non-Energy Use of Fuels

(Sheet 1 of 1)

FUEL TYPE [1]	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	of carbon stored in non-energy use of fuels (Gg C)
Naphtha [2]				
Lubricants				
Bitumen				
Coal Oils and Tars (from Coking Coal)				
Natural Gas [2]				
Gas/Diesel Oil [2]				
Butane [2]				
Ethane [2]				
Other *(please specify)*				

Additional information [a]

CO_2 not emitted ($Gg\ CO_2$)	Subtracted from *(specify source category)*

[1] Where fuels are used in different industries, please enter in different rows.

[2] Enter these fuels when they are used as feedstocks.

(a) The fuel lines continue from the table to the left.

Note: The table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feedstocks could continue to use their methodologies, and provide explanation notes in the documentation box below.

Documentation box: A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during the use of the energy carriers in the industrial production (e.g. fertilizer production), or during the use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions use the above table, filling an extra "Additional information" table, as shown below:

Associated CO_2 emissions (Gg)	Allocated under *(Specify source category)* [a]

[a] e.g. Industrial Processes, Waste Incineration, etc.

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fugitive Emissions from Solid Fuels

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR		EMISSIONS	
	Amount of fuel produced [1] (Mt)	CH_4 (kg/t)	CO_2 (kg/t)	CH_4 (Gg)	CO_2 (Gg)
1. B. 1. a. Coal Mining and Handling					
i. Underground Mines [2]					
Mining Activities					
Post-Mining Activities					
ii. Surface Mines [2]					
Mining Activities					
Post-Mining Activities					
1. B. 1. b. Solid Fuel Transformation					
1. B. 1. c. Other *(please specify)* [3]					

Additional information [4]

Description	Value
Amount of CH_4 drained (recovered) and utilized or flared (Gg)	
Number of active underground mines	
Number of mines with drainage (recovery) systems	

[4] For underground mines

[1] Use the documentation box to specify whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.

[2] Emissions both for Mining Activities and Post-Mining Activities are calculated with the activity data in lines Underground Mines and Surface Mines respectively.

[3] Use the "Other" rows to enter any other solid fuel related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

Note: There are no clear references to the coverage of 1.B.1.b. and 1.B.1.c. in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, indicate this (IE) and make a reference in Table 9 (completeness) and/or in the documentation box.

Documentation box:

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fugitive Emissions from Oil and Natural Gas

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS		
	Description [11]	Value	CO_2 (kg/PJ) [12]	CH_4 (kg/PJ) [12]	N_2O (kg/PJ) [12]	CO_2 (Gg)	CH_4 (Gg)	N_2O (Gg)
1. B. 2. a. Oil [13]								
i. Exploration	*(e.g. number of wells drilled)*							
ii. Production [14]	*(e.g. PJ of oil produced)*							
iii. Transport	*(e.g. PJ oil loaded in tankers)*							
iv. Refining / Storage	*(e.g. PJ oil refined)*							
v. Distribution of oil products	*(e.g. PJ oil refined)*							
vi. Other								
1. B. 2. b. Natural Gas								
Exploration								
i. Production [14] / Processing	*(e.g. PJ gas produced)*							
ii. Transmission	*(e.g. PJ gas consumed)*							
Distribution	*(e.g. PJ gas consumed)*							
iii. Other Leakage	*(e.g. PJ gas consumed)*							
in industrial plants and power stations								
in residential and commercial sectors								
1. B. 2. c. Venting [15]								
i. Oil	*(e.g. PJ oil produced)*							
ii. Gas	*(e.g. PJ gas produced)*							
iii. Combined								
Flaring								
i. Oil	*(e.g. PJ gas consumption)*							
ii. Gas	*(e.g. PJ gas consumption)*							
iii. Combined								
1.B.2.d. Other *(please specify)* [16]								

Additional information

Description	Value
Pipelines length (km)	
Number of oil wells	
Number of gas wells	
Gas throughput [14]	
Oil throughput [14]	
Other relevant information *(specify)*	

[14] In the context of oil and gas production, throughput is a measure of the total production, such as barrels per day of oil, or cubic meters of gas per year. Specify the units of the reported value. Take into account that these values should be consistent with the activity data reported under the production rows of the main table.

[11] Specify the activity data used and fill in the activity data description column, as given in the examples in brackets. Use the document box to specify whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one variable is used as activity data.

[12] The unit of the implied emission factor depends on the units of the activity data used. The most common unit is given as an example (kg/PJ) but for each case the real unit of the emission factor should be specified.

[13] Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iii, respectively.

[14] If using default emission factors these categories will include emissions from production other than venting and flaring.

[15] If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for here. Parties using the IPCC software could report those emissions together, indicating so in the documentation box.

[16] For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

Documentation box:

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY

Year :

International Bunkers and Multilateral Operations

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption (TJ)	CO_2 (t/TJ)	CH_4 (kg/TJ)	N_2O (kg/TJ)	CO_2 (Gg)	CH_4 (Gg)	N_2O (Gg)
Marine Bunkers							
Gasoline							
Gas/Diesel Oil							
Residual Fuel Oil							
Lubricants							
Coal							
Other *(please specify)*							
Aviation Bunkers							
Jet Kerosene							
Gasoline							
Multilateral Operations [1]							

Additional information

Fuel consumption	Allocation [a] (percent)	
	Domestic	International
Marine		
Aviation		

[a] For calculating the allocation of fuel consumption, use the sums of fuel consumption by domestic navigation and aviation (Table 1.A(a)) and by international bunkers (Table 1.C)

[1] Parties may choose to report or not report the activity data and emission factors for multilateral operation consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines on inventories. In any case, Parties should report the emissions from multilateral operations, where available, under the Memo Items section of the Summary tables and in the Sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for informational purposes only.

Documentation box: Please explain how the consumption of international marine and aviation bunkers fuels was estimated and separated from the domestic consumption.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES

Year :

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)						(Gg)			
Total Industrial Processes													
A. Mineral Products													
1. Cement Production													
2. Lime Production													
3. Limestone and Dolomite Use													
4. Soda Ash Production and Use													
5. Asphalt Roofing													
6. Road Paving with Asphalt													
7. Other *(please specify)*													
B. Chemical Industry													
1. Ammonia Production													
2. Nitric Acid Production													
3. Adipic Acid Production													
4. Carbide Production													
5. Other *(please specify)*													
C. Metal Production													
1. Iron and Steel Production													
2. Ferroalloys Production													
3. Aluminium Production													
4. SF_6 Used in Aluminium and Magnesium Foundries													
5. Other *(please specify)*													

P = Potential emissions based on Tier 1 approached the IPCC Guidelines. A = Actual emissions based on Tier 2 approached the IPCC Guidelines. This only applies in sectors where methods exist for both tiers.

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)									
D. Other Production													
1. Pulp and Paper													
2. Food and Drink[1]													
E. Production of Halocarbons and SF_6													
1. By-product Emissions													
Production of HCFC-22													
Other													
2. Fugitive Emissions													
3. Other *(please specify)*													
F. Consumption of Halocarbons and SF_6													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Semiconductor Manufactury													
7. Electrical Equipment													
8. Other *(please specify)*													
G. Other *(please specify)*													

[1] CO_2 from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on emissions of non-biogenic origin should be reported.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Year :

Emissions of CO_2, CH_4 and N_2O

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS[2]					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
	Description[1]	(kt)	(t/t)	(t/t)	(t/t)	(Gg)	[2]	(Gg)	[2]	(Gg)	[2]
A. Mineral Products											
1. Cement Production	*(e.g. cement or clinker*										
2. Lime Production											
3. Limestone and Dolomite Use											
4. Soda Ash Production and Use											
5. Asphalt Roofing											
6. Road Paving with Asphalt											
7. Other *(please specify)*											
Glass Production											
B. Chemical Industry											
1. Ammonia Production [3]											
2. Nitric Acid Production											
3. Adipic Acid Production											
4. Carbide Production											
Silicon Carbide											
Calcium Carbide											
5. Other *(please specify)*											
Carbon Black											
Ethylene											
Dichloroethylene											
Styrene											
Methanol											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement or clinker for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in brackets) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] Enter cases in which the final emissions are reduced with the quantities of emission recovery, oxidation, destruction, transformation. Adjusted emissions are reported and the quantitative information on recovery, oxidation, destruction, and transformation should be given in the additional columns provided.

[3] To avoid double counting make offsetting deductions from fuel consumption (e.g. natural gas) in Ammonia Production, first for feedstock use of the fuel, and then to a sequestering use of the feedstock.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Year :

Emissions of CO_2, CH_4 and N_2O

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS[2]					
	Production/Consumption Quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
	Description [1]	(kt)	(t/t)	(t/t)	(t/t)	(Gg)	[2]	(Gg)	[2]	(Gg)	[2]
C. Metal Production [4]											
1. Iron and Steel Production											
Steel											
Pig Iron											
Sinter											
Coke											
2. Ferroalloys Production											
3. Aluminium Production											
5. Other *(please specify)*											
D. Other Production											
1. Pulp and Paper											
2. Food and Drink											
G. Other ***(please specify)***											

[4] More specific information (e.g. data on virgin and recycled steel production) could be provided in the documentation box.

Note: In case of confidentiality of the activity data information, the entries should provide aggregate figures but there should be a note in the documentation box indicating this.

Documentation box:

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6

(Sheet 1 of 2)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Total HFCs[1]	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Total PFCs[1]	SF_6
	(t)[2]																						
Total Actual Emissions of Halocarbons (by chemical) and SF_6																							
C. Metal Production																							
Aluminum Production																							
SF_6 Used in Aluminum Foundries																							
SF_6 Used in Magnesium Foundries																							
E. Production of Halocarbons and SF_6																							
1 By-product Emissions																							
Production of HCFC-22																							
Other																							
2 Fugitive Emissions																							
3 Other *(please specify)*																							
F(a). Consumption of Halocarbons and SF_6 (actual emissions - Tier 2)																							
1 Refrigeration and Air Conditioning Equipment																							
2 Foam Blowing																							
3 Fire Extinguishers																							
4 Aerosols/Metered Dose Inhalers																							
5 Solvents																							
6 Semiconductor Manufacture																							
7 Electrical Equipment																							
8 Other *(please specify)*																							
G. Other *(please specify)*																							

[1] Although shaded, the columns with HFCs and PFCs totals on sheet 1 are kept for consistency with sheet 2 of the table

[2] Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. [t] instead of [Gg]

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the relevant documentation boxes of the Sectoral background data tables or as a footnote to this table. Gases with GWP not yet agreed upon by the COP, should be reported in Table 9 (Completeness), sheet 2

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 2 of 2)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Total PFCs	SF_6
	(t)[3]																						
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF_6 [4]																							
Production[4]																							
Import																							
In bulk																							
In products [5]																							
Export																							
In bulk																							
In products [5]																							
Destroyed amount																							
GWP values used	**11700**	**650**	**150**	**1300**	**2800**	**1000**	**1300**	**140**	**300**	**3800**	**2900**	**6300**	**560**		**6500**	**9200**	**7000**	**7000**	**8700**	**7500**	**7400**		**23900**
Total Actual Emissions [6] ($Gg\ CO_2$ eq.)																							
C Metal Production																							
E. Production of Halocarbons and SF_6																							
F(a) Consumption of Halocarbons and SF_6																							
G Other *(please specify)*																							
Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF_6																							
Actual emissions - F(a) ($Gg\ CO_2$ eq.)																							
Potential emissions - F(p) [7] ($Gg\ CO_2$ eq.)																							
Potential/Actual emissions ratio																							

[3] Potential emissions of each chemical of halocarbons and SF_6 estimated using Tier 1a or Tier 1b of the IPCC Guidelines (Volume 3, Reference Manual, pp. 2.47-2.50). When potential emissions estimates are available in a disaggregated manner corresponding to the subsectors for actual emissions defined on sheet 1 of this table, these should be reported in an annex to sheet 2, using the format of sheet 1, sector F(a). Use Summary 3 of this common reporting format to indicate whether Tier 1a or Tier 1b was used.

[4] Production refers to production of new chemicals. Recycled substances could be included here, but it should be ensured that double counting of emissions is avoided. Relevant explanations should be provided as a footnote to the table.

[5] Relevant just for Tier 1b.

[6] Sums of the actual emissions of each chemical of halocarbons and SF_6 from the source categories given in sheet 1 of the table multiplied by the corresponding GWP values.

[7] Potential emissions of each chemical of halocarbons and SF_6 taken from row F(p) multiplied by the corresponding GWP values.

Note: As stated in the revised UNFCCC guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO_2 equivalents. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability.

Year:

TABLE 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal Production; Production of Halocarbons and SF_6

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]	EMISSIONS[2]	
	Description[1]	(t)	(kg/t)	(t)	[3]
C. PFCs and SF_6 from Metal Production					
PFCs from Aluminium Production					
CF_4					
C_2F_6					
SF_6					
Aluminium Foundries	*(SF_6 consumption)*				
Magnesium Foundries					
E. Production of Halocarbons and SF_6					
1. By-product Emissions					
Production of HCFC-22					
HFC-23					
Other					
(specify chemical)					
2. Fugitive Emissions					
HFCs *(specify chemical)*					
PFCs *(specify chemical)*					
SF_6					
3. Other *(please specify)*					

[1] Specify the activity data used as shown in the examples within brackets. Where applying Tier 1b (for C), Tier 2 (for E) and country specific methods, specify any other relevant activity data used in the documentation box below.

[2] Emissions and implied emission factors are after recovery.

[3] Enter cases in which the final emissions are reported after subtracting the quantities of emission recovery, oxidation, destruction, transformation. Enter these quantities in the specified column and use the documentation box for further explanations.

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note in the documentation box indicating this.

Documentation box:

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA (Amount of fluid)			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning [1]	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
1 Refrigeration									
Air Conditioning Equipment									
Domestic Refrigeration (specify chemical) [2]									
(e.g. HFC-32)									
(e.g. HFC-125)									
(e.g. HFC-134a)									
(e.g. HFC-152a)									
(e.g. HFC-143a)									
Commercial Refrigeration									
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air-Conditioning									
Mobile Air-Conditioning									
2 Foam Blowing									
Hard Foam									
Soft Foam									

[1] Parties should use the documentation box to provide information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation.

[2] Use the rows left empty to specify the chemical consumed, as given in the example. If needed, new rows could be added for reporting the disaggregated chemicals from a source.

Note: Table 2 (II) F provides for reporting of the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF_6, using the "bottom-up approach" (based on the total stock of equipment and estimated emission rates from this equipment). Some Parties may prefer to estimate their actual emissions following the alternative "top-down approach" (based on annual sales of equipment and/or gas). These Parties should provide the activity data used in the current format and any other relevant information in the documentation box. Data these Parties should provide includes (1) the amount of fluid used to fill new products, (2) the amount of fluid used to service existing products, (3) the amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products), (4) the product lifetime, and (5) the growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products. Alternatively, Parties may provide alternative formats with equivalent information. These formats may be considered for future versions of the common reporting format after the trial period.

Year :

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning [1]	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
3 Fire Extinguishers									
4 Aerosols									
Metered Dose Inhalers									
Other									
5 Solvents									
6 Semiconductors									
7 Electric Equipment									
8 Other ***(please specify)***									

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note indicating this and explanations in the documentation box.

Documentation box:

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	N_2O	NMVOC
	(Gg)		
Total Solvent and Other Product Use			
A. Paint Application			
B. Degreasing and Dry Cleaning			
C. Chemical Products, Manufacture and Processing			
D. Other ***(please specify)***			
(Use of N_2O for Anaesthesia)			
(N_2O from Fire Extinguishers)			
(N_2O from Aerosol Cans)			
(Other Use of N_2O)			

Please account for the quantity of carbon released in the form of NMVOC in both the NMVOC and the CO_2 columns.

Note: The IPCC Guidelines do not provide methodologies for the calculation of emissions of N_2O from Solvent and Other Product Use. If reporting such data, Parties should provide additional information (activity data and emission factors) used to make these estimates in the documentation box to Table 3.A-D.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS	
	Description	(kt)	CO_2 (t/t)	N_2O (t/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other ***(please specify)*** [1]				
(Use of N_2O for Anaesthesia)				
(N_2O from Fire Extinguishers)				
(N_2O from Aerosol Cans)				
(Other Use of N_2O)				

[1] Some probable sources are provided in brackets. Complement the list with other relevant sources. Make sure that the order is the same as in Table 3.

Note: The table follows the format of the IPCC Sectoral Report for Solvent and Other Product Use, although some of the source categories are not relevant to the direct GHG emissions.

Documentation box:

Year :

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
Total Agriculture					
A. Enteric Fermentation					
1. Cattle					
Dairy Cattle					
Non-Dairy Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other *(please specify)*					
B. Manure Management					
1. Cattle					
Dairy Cattle					
Non-Dairy Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
B. Manure Management (continued)					
10. Anaerobic Lagoons					
11. Liquid Systems					
12. Solid Storage and Dry Lot					
13. Other *(please specify)*					
C. Rice Cultivation					
1. Irrigated					
2. Rainfal					
3. Deep Water					
4. Other *(please specify)*					
D. Agricultural Soils[1]					
1. Direct Soil Emissions					
2. Animal Production					
3. Indirect Emissions					
4. Other *(please specify)*					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues					
1. Cereals					
2. Pulse					
3. Tuber and Root					
4. Sugar Cane					
5. Other *(please specify)*					
G. Other *(please specify)*					

[1] See footnote 4 to Summary 1A of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D. Agricultural soils category of the sector Agriculture should indicate the amount [Gg] of these emissions or removals in the documentation box to Table 4.D. Additional information (activity data, implied emissions factors) should also be provided using the relevant documentation box to Table 4.D. This table is not modified for reporting the CO_2 emissions and removals for the sake of consistency with the IPCC tables (i.e. IPCC Sectoral Report for Agriculture).

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH_4 emissions, CH_4 and N_2O removals from agricultural soils, or CO_2 emissions from savanna burning or agricultural residues burning. If you have reported such data, you should provide additional information (activity data and emission factors) used to make these estimates using the relevant documentation boxes.

TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Enteric Fermentation

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA[1] AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS
	Population size[2] (1000 head)	Average daily feed intake (MJ/day)	CH_4 conversion (%)	CH_4 (kg CH_4/head/yr)
1. Cattle				
Dairy Cattle[3]				
Non-Dairy Cattle				
2. Buffalo				
3. Sheep				
4. Goats				
5. Camels and Llamas				
6. Horses				
7. Mules and Asses				
8. Swine				
9. Poultry				
10. Other *(please specify)*				

Additional information (for Tier 2)[a]

Disaggregated list of animals[b] Indicators		Dairy Cattle	Non-Dairy Cattle	Other *(specify)*		
Weight	(kg)					
Feeding situation[c]						
Milk yield	(kg/day)					
Work	(hrs/day)					
Pregnant	(%)					
Digestibility of feed	(%)					

[a] Compare to Tables A-1 and A-2 of the IPCC Guidelines (Volume 3 Reference Manual, pp. 4.31-4.34). These data are relevant if Parties do not have data on average feed intake.

[b] Disaggregate to the split actually used. Add columns to the table if necessary.

[c] Specify feeding situation as pasture, stall fed, confined, open range, etc.

[1] In the documentation boxes to all Sectoral background data tables for Agriculture, Parties should provide information on whether the activity data is one year or a 3-year average.

[2] Parties are encouraged to provide detailed livestock population data by animal type and region in a separate table. This consistent set of animal population statistics should be used to estimate CH_4 emissions from enteric fermentation, CH_4 and N_2O from manure management, N_2O direct emissions from soil and N_2O emissions associated with manure production, as well as emissions from the use of manure as fuel, and sewage-related emissions reported in the waste sector.

[3] Including data on dairy heifers, if available.

Documentation box:

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

CH_4 Emissions from Manure Management

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS
	Population size[1]	Allocation by climate region[2]			Typical animal mass	VS[3] daily excretion	CH_4 producing potential (Bo)[3]	CH_4
		Cool	Temperate	Warm				
	(1000 head)	(%)			(kg)	(kg dm/head/yr)	(CH_4 m^3/kg VS)	(kg CH_4/head/yr)
1. Cattle								
Dairy Cattle[4]								
Non-Dairy Cattle								
2. Buffalo								
3. Sheep								
4. Goats								
5. Camels and Llamas								
6. Horses								
7. Mules and Asses								
8. Swine								
9. Poultry								

[1] See footnote 1 to Table 4.A of this common reporting format.

[2] Climate regions are defined in terms of annual average temperature as follows: Cool = less than 15°C, Temperate = 15°C to 25°C inclusive, and Warm = greater than 25°C (see Table 4.2 of the IPCC Guidelines (Volume 3. Reference Manual, p. 4.8)).

[3] VS = Volatile Solids, Bo = maximum methane producing capacity for manure (IPCC Guidelines (Volume 3. Reference Manual, p. 4.23 and p. 4.15).

[4] Including data on dairy heifers, if available.

Additional information (for Tier 2)

Animal category[a]	Indicator	Climate region	Animal waste management system					
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range paddock	Other
Dairy Cattle	Allocation[a]	Cool						
		Temperate						
		Warm						
	MCF[b]	Cool						
		Temperate						
		Warm						
Non-Dairy Cattle	Allocation[a]	Cool						
		Temperate						
		Warm						
	MCF[b]	Cool						
		Temperate						
		Warm						
Swine	Allocation[a]	Cool						
		Temperate						
		Warm						
	MCF[b]	Cool						
		Temperate						
		Warm						

[a] Copy the above table as many times as necessary.

[b] MCF = Methane Conversion Factor (IPCC Guidelines, (Volume 3 Reference Manual, p. 4.9)). In the case of use of other climate region categorization, please replace the entries in the cells with the climate regions for which the MCFs are specified.

Documentation box:

Year :

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE
N_2O Emissions from Manure Management
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS	
	Population size [1] (1000s)	Nitrogen excretion (kg N/head/yr)	Nitrogen excretion per animal waste management system (kg N/yr)						Emission factor per animal waste management system (kg N_2O-N/kg N)	
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other		
Non-Dairy Cattle									Anaerobic lagoon	
Dairy Cattle									Liquid system	
Sheep									Solid storage and dry lot	
Swine									Other *(please specify)*	
Poultry										
Other *(please specify)*										
Total per AWMS[2]										

[1] See footnote 1 to Table 4.A of this common reporting format

[2] AWMS - Animal Waste Management System

Documentation box:

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Rice Cultivation

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR [1]	EMISSIONS
		Harvested area [2]	Organic amendments added [3]		CH_4	CH_4
		(10^9 m^2/yr)	type	(t/ha)	(g/m^2)	(Gg)
1. Irrigated						
Continuously Flooded						
Intermittently Flooded	Single Aeration					
	Multiple Aeration					
2. Rainfed						
Flood Prone						
Drought Prone						
3. Deep Water						
Water Depth 50-100 cm						
Water Depth > 100 cm						
4. Other *(please specify)*						
Upland Rice [4]						
Total [4]						

[1] The implied emission factor takes account of all relevant corrections for continuously flooded fields without organic amendment plus the correction for the organic amendments, if used, as well as of the effect of different soil characteristics, if taken into account, on methane emissions.

[2] Harvested area is the cultivated area multiplied by the number of cropping seasons per year.

[3] Specify dry weight or wet weight for organic amendments

[4] These rows are included to allow comparison with the international statistics. Upland rice emissions are assumed to be zero and are ignored in the emission calculations.

Documentation box:

When dissagregating by more than one region within a country, provide additional information in the documentation box

Where available, provide activity data and scaling factors by soil type and rice cultivar.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Agricultural Soils[1]

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	EMISSIONS
	Description	Value	(kg N_2O-N/kg N)[2]	(Gg N_2O)
Direct Soil Emissions	N input to soils (kg N/yr)			
Synthetic Fertilizers	Use of synthetic fertilizers (kg N/yr)			
Animal Wastes Applied to Soils	Nitrogen input from manure applied to soils (kg N/yr)			
N-fixing Crops	Dry pulses and soybeans produced (kg dry biomass/yr)			
Crop Residue	Dry production of other crops (kg dry biomass/yr)			
Cultivation of Histosols	Area of cultivated organic soils (ha)			
Animal Production	N excretion on pasture range and paddock (kg N/yr)			
Indirect Emissions				
Atmospheric Deposition	Volatized N (NH_3 and NOx) from fertilizers and animal wastes (kg N/yr)			
Nitrogen Leaching and Run-off	N from fertilizers and animal wastes that is lost through leaching and run off (kg N/yr)			
Other ***(please specify)***				

Additional information

Fraction [a]	Description	Value
$Frac_{BURN}$	Fraction of crop residue burned	
$Frac_{FUEL}$	Fraction of livestock N excretion in excrements burned for fuel	
$Frac_{GASF}$	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH_3 and NOx	
$Frac_{GASM}$	Fraction of livestock N excretion that volatilizes as NH_3 and NOx	
$Frac_{GRAZ}$	Fraction of livestock N excreted and deposited onto soil during grazing	
$Frac_{LEACH}$	Fraction of N input to soils that is lost through leaching and runoff	
$Frac_{NCRBF}$	Fraction of N in non-N-fixing crop	
$Frac_{NCRBO}$	Fraction of N in N-fixing crop	
$Frac_R$	Fraction of crop residue removed from the field as crop	

[a] Use the fractions as specified in the IPCC Guidelines (Volume 3 Reference Manual pp. 4.92 - 4.113)

[1] See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D. Agricultural Soils category should indicate the amount [Gg] of these emissions or removals and relevant additional information (activity data, implied emissions factors) in the documentation box.

[2] To convert from N_2O-N to N_2O emissions, multiply by 44/28.

Documentation box:

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Prescribed Burning of Savannas

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned	Average aboveground biomass density	Fraction of savanna burned	Biomass burned	Nitrogen fraction in biomass	(kg/t dm)		(Gg)	
(specify ecological zone)	(k ha/yr)	(t dm/ha)		(Gg dm)		CH_4	N_2O	CH_4	N_2O

Additional information

	Living	Dead
Fraction of aboveground biomass		
Fraction oxidized		
Carbon fraction		

Documentation box:

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Field Burning of Agricultural Residues

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		EMISSIONS	
	Crop production (1)	Residue/ Crop ratio	Dry matter fraction	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass of residues	CH_4 (kg/t dm)	N_2O (kg/t dm)	CH_4 (Gg)	N_2O (Gg)
1. Cereals										
Wheat										
Barley										
Maize										
Oats										
Rye										
Rice										
Other *(please specify)*										
2. Pulse [1]										
Dry bean										
Peas										
Soybeans										
Other *(please specify)*										
3 Tuber and Root										
Potatoes										
Other *(please specify)*										
4 Sugar Cane										
5 Other *(please specify)*										

[1] To be used in Table 4.D of this common reporting format

Documentation box:

TABLE 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions/ removals	CH_4	N_2O	NO_x	CO
	(Gg)						
Total Land-Use Change and Forestry							
A. Changes in Forest and Other Woody Biomass Stocks							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
Harvested Wood [1]							
B. Forest and Grassland Conversion [2]							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
C. Abandonment of Managed Lands							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
D. CO_2 Emissions and Removals from Soil							
Cultivation of Mineral Soils							
Cultivation of Organic Soils							
Liming of Agricultural Soils							
Forest Soils							
Other *(please specify)* [3]							
E. Other *(please specify)*							

[1] Following the IPCC Guidelines, the harvested wood should be reported under Changes in Forest and Other Woody Biomass Stocks (Volume 3 Reference Manual, p 5.17)

[2] Include only the emissions of CO_2 from Forest and Grassland Conversion. Associated removals should be reported under section D

[3] Include emissions from soils not reported under sections A, B and C

Note: See footnote 4 to Summary 1 Aof this common reporting format

TABLE 5.A SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Year:

Changes in Forest and Other Woody Biomass Stocks

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			ACTIVITY DATA		IMPLIED EMISSION FACTORS	ESTIMATES
			Area of forest/biomass stocks (kha)	Average annual growth rate (t dm/ha)	Implied carbon uptake factor (t C/ha)	Carbon uptake increment (Gg C)
Tropical	Plantations	Acacia spp.				
		Eucalyptus spp.				
		Tectona grandis				
		Pinus spp.				
		Pinus caribaea				
		Mixed Hardwoods				
		Mixed Fast-Growing Hardwoods				
		Mixed Softwoods				
	Other Forests	Moist				
		Seasonal				
		Dry				
	Other *(specify)*					
Temperate	Plantations					
	Commercial	Evergreen				
		Deciduous				
	Other *(specify)*					
Boreal						

Non-Forest Trees *(specify type)*	Number of trees (1000s of trees)	Annual growth rate (kt dm/1000 trees)	Carbon uptake factor (t C/tree)	Carbon uptake increment (Gg C)
Total annual growth increment (Gg C)				
Gg CO_2				

	Amount of biomass removed (kt dm)	Carbon emission factor (t C/t dm)	Carbon release (Gg C)
Total biomass removed in Commercial Harvest			
Traditional Fuelwood Consumed			
Total Other Wood Use			
Total Biomass Consumption from Stocks [1] (Gg C)			
Other Changes in Carbon Stocks [2] (Gg C)			
Gg CO_2			

Net annual carbon uptake (+) or release (-) (Gg C)	
Net CO_2 emissions (-) or removals (+) (Gg CO_2)	

[1] Make sure that the quantity of biomass burned off-site is subtracted from this total.

[2] The net annual carbon uptake/release is determined by comparing the annual biomass growth versus annual harvest, including the decay of forest products and slash left during harvest. The IPCC Guidelines recommend default assumption that all carbon removed in wood and other biomass from forests is oxidized in the year of removal. The emissions from decay could be included under Other Changes in Carbon Stocks.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

TABLE 5.B SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Year :

Forest and Grassland Conversion

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS					EMISSIONS				
		On and off site burning				Decay of above-ground biomass[1]			Burning				Decay	Burning				Decay
									On site			Off site		On site			Off site	
		Area converted annually	Annual net loss of biomass	Quantity of biomass burned		Average area converted	Average annual net loss of biomass	Average quantity of biomass left to decay	CO_2	CH_4	N_2O	CO_2	CO_2	CO_2	CH_4	N_2O	CO_2	CO_2
				On site	Off site													
Vegetation types		(kha)	(kt dm)	(kt dm)	(kt dm)	(kha)	(t dm/ha)	(kt dm)	(t/ha)					(Gg)				
Tropical	Wet/Very Moist																	
	Moist, short dry season																	
	Moist, long dry season																	
	Dry																	
	Montane Moist																	
	Montane Dry																	
Tropical Savanna/Grasslands																		
Temperate	Coniferous																	
	Broadleaf																	
	Mixed Broadleaf/ Coniferous																	
Grasslands																		
Boreal	Mixed Broadleaf/ Coniferous																	
	Coniferous																	
	Forest-tundra																	
Grasslands/Tundra																		
Other																		

[1] Activity data are for default 10-year average. Specify the average decay time which is appropriate for the local conditions, if other than 10 years.

Emissions/Removals	On site	Off site
Immediate carbon release from burning		
Total On site and Off site (Gg C)		
Delayed emissions from decay (Gg C)		
Total annual carbon release (Gg C)		
Total annual CO_2 emissions (Gg CO_2)		

Additional information

Fractions	On site	Off site
Fraction of biomass burned (average)		
Fraction which oxidizes during burning (average)		
Carbon fraction of aboveground biomass (average)		
Fraction left to decay (average)		
Nitrogen-carbon ratio		

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

Year :

TABLE 5.C SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Abandonment of Managed Lands

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		ESTIMATES	
		Total area abandoned and regrowing [1]		Annual rate of aboveground biomass growth		Carbon fraction of aboveground biomass		Rate of aboveground biomass carbon uptake		Annual carbon uptake in aboveground biomass	
Original natural ecosystems		first 20 years (kha)	>20 years (kha)	first 20 years (t dm/ha)	>20 years (t dm/ha)	first 20 years	>20 years	first 20 years (t C/ha/yr)	>20 years (t C/ha/yr)	first 20 years (Gg C/yr)	>20 years (Gg C/yr)
Tropical	Wet/Very Moist										
	Moist, short dry season										
	Moist, long dry season										
	Dry										
	Montane Moist										
	Montane Dry										
Tropical Savanna/Grasslands											
Temperate	Mixed Broadleaf/Coniferous										
	Coniferous										
	Broadleaf										
Grasslands											
Boreal	Mixed Broadleaf/Coniferous										
	Coniferous										
	Forest-tundra										
Grasslands/ Tundra											
Other											

Total annual carbon uptake (Gg C)	
Total annual CO_2 removal (Gg CO_2)	

[1] If lands are regenerating to grassland, then the default assumption is that no significant changes in above-ground biomass occur.

Note: Sectoral background data tables on Land-use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

TABLE 5.D SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Year :

CO_2 Emissions and Removals from Soil

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	ESTIMATES
	Land area (Mha)	Average annual rate of soil carbon uptake/removal (Mg C/ha/yr)	Net change in soil carbon in mineral soils (Tg C over 20 yr)
Cultivation of Mineral Soils [1b]			
High Activity Soils			
Low Activity Soils			
Sands			
Volcanic			
Wetland (Aquic)			
Other *(specify)*			
	Land area (ha)	Annual loss rate (Mg C/ha/yr)	Carbon emissions from organic soils (Mg/yr)
Cultivation of Organic Soils			
Cool Temperate			
Upland Crops			
Pasture/Forest			
Warm Temperate			
Upland Crops			
Pasture/Forest			
Tropical			
Upland Crops			
Pasture/Forest			
	Total annual amount of lime (Mg)	Carbon conversion factor	Carbon emissions from liming (Mg C)
Liming of Agricultural Soils			
Limestone $CaCO_3$			
Dolomite $CaMg(CO_3)_2$			

Total annual net carbon emissions from agriculturally impacted soils (Gg C)	
Total annual net CO_2 emissions from agriculturally impacted soils (Gg CO_2)	

Additional information

Year	Climate [10]	land-use/ management system [10]	Soil type [1]					
			High activity soils	Low activity soils	Sands	Volcanic	Wetland (Aquic)	Organic soil
			percent distribution (%)					
20 years prior	*(e.g. tropical, dry)*	*(e.g. savanna)*						
		(e.g. irrigated, cropping)						
inventory year								

[10] These should represent the major types of land management systems per climate regions presented in the country as well as ecosystem types which were either converted to agriculture (e.g., forest, savanna, grassland) or have been derived from previous agricultural land-use (e.g., abandoned lands, reforested lands). Systems should also reflect differences in soil carbon stocks that can be related to differences in management (IPCC Guidelines (Volume 2 Workbook, Table 5-9, p. 5.26, and Appendix (pp. 5-31 - 5.38))

[1b] The information to be reported under Cultivation of Mineral Soils aggregates data per soil type over all land-use/management systems. This refers to land area data and to the emission estimates and implied emissions factors accordingly.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

TABLE 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Waste							
A. Solid Waste Disposal on Land							
1. Managed Waste Disposal on Land							
2. Unmanaged Waste Disposal Sites							
3. Other *(please specify)*							
B. Wastewater Handling							
1. Industrial Wastewater							
2. Domestic and Commercial Wastewater							
3. Other *(please specify)*							
C. Waste Incineration							
D. Other ***(please specify)***							

[1] Note that CO_2 from Waste Disposal and Incineration source categories should only be included if it stems from non-biological or inorganic waste sources.

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE

Year :

Solid Waste Disposal

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION				IMPLIED EMISSION FACTOR		EMISSIONS[1]	
	Annual MSW at the SWDS (Gg)	MCF	DOC degraded (Gg)	CH_4 recovered [2] (Gg)	CH_4 (t/t MSW)	CO_2 (t/t MSW)	CH_4 (Gg)	CO_2 [3] (Gg)
1 Managed Waste Disposal on Land							[4]	
2 Unmanaged Waste Disposal Sites								
- deep (>5 m)								
- shallow (<5 m)								
3 Other (please specify)								

Additional information

Description	Value
Total population (1000s)[5]	
Urban population (1000s)[5]	
Waste generation rate (kg/capita/day)	
Fraction of MSW disposed to SWDS	
Fraction of DOC in MSW	
Fraction of wastes incinerated	
Fraction of wastes recycled	
CH_4 oxidation factor [6]	
CH_4 fraction in landfill gas	
Number of SWDS recovering CH_4	
CH_4 generation rate constant (k) [7]	
Time lag considered (yr) [7]	
Composition of landfilled waste (%)	
Paper and paperboard	
Food and garden waste	
Plastics	
Glass	
Textiles	
Other (specify)	
other - inert	
other - organic	

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE

Waste Incineration

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR			EMISSIONS		
	Amount of incinerated wastes (Gg)	CO_2 (kg/t waste)	CH_4 (kg/t waste)	N_2O (kg/t waste)	CO_2 [3] (Gg)	CH_4 (Gg)	N_2O (Gg)
Waste Incineration (please specify)							
(biogenic) [3]							
(please specify) [3]							

MSW - Municipal Solid Waste, SWDS - Solid Waste Disposal Site, MCF - Methane Correction Factor, DOC - Degradable Organic Carbon (IPCC Guidelines (Volume 3, Reference Manual, section 6.2.4)). MSW includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. MSW should not include inorganic industrial waste such as construction or demolition materials.

[1] Actual emissions (after recovery).

[2] CH_4 recovered and flared or utilised.

[3] Under Waste Disposal, CO_2 emissions should be reported only when the disposed wastes are combusted at the disposal site which might constitute a management practice. CO_2 emissions from non biogenic wastes are included in the totals, while the CO_2 emissions from biogenic wastes are not included in the totals.

[4] See IPCC Guidelines (Volume 3, Reference Manual, p. 6.9).

[5] Specify whether total or urban population is used and the rationale for doing so.

[6] See IPCC Guidelines (Volume 3, Reference Manual, p. 6.9).

[7] For Parties using Tier 2 methods.

Documentation box: All relevant information used in calculation should be provided in the additional information box and in the documentation box. Parties that use country specific models should note this with a brief rationale in the documentation box and fill the relevant cells only.

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Wastewater Handling
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION[1]				IMPLIED EMISSION FACTOR			EMISSIONS[2]		
	Total organic product		CH_4 recovered and/or flared		CH_4		N_2O[3]	CH_4		N_2O[3]
	Wastewater	Sludge	Wastewater	Sludge	Wastewater	Sludge		Wastewater	Sludge	
	(see kg ... yr)		(Gg)		($kg\ kg\ TR^{-1}$)	($kg\ kg\ TR^{-1}$)	($kg\ kg\ TR^{-1}$)	(Gg)		(Gg)
Industrial Wastewater										
Domestic and Commercial Wastewater										
Other (please specify)										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
	Population[4] (1000s)	Protein consumption (per capita or $kg\ N\ kg^{-1}\ person\ yr^{-1}$)	N Intake ($Gg\ N\ kg^{-1}\ person$)	N_2O ($kg\ N_2O\text{-}N\ kg^{-1}$ sewage N produced)	N_2O (Gg)
N_2O from human sewage[5]					

[1] TR – degradable organic component. TR indicators are COD (if Chemical Oxygen Demand) for industrial wastewater and BOD (Biochemical Oxygen Demand) for Domestic/Commercial wastewater sludge (IPCC Guidelines Volume 3 Reference Manual pp. 6.14 - 6.18).

[2] Actual emissions (after recovery).

[3] Parties using other methods for estimation of N_2O emissions from human sewage or wastewater treatment should provide the corresponding information on methods, activity data and emission factors used in the documentation box. Use the table to provide aggregate data.

[4] Specify whether total or urban population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.

Additional information

	Domestic	Industrial
Total wastewater (m^3)		
Treated wastewater (*)		

Wastewater streams	Wastewater treated (m^3)	TR ($kg\ COD\ (or\ BOD)\ m^{-3}$)
Industrial		
Iron and steel		
Non-ferrous		
Fertilizers		
Food and beverage		
Paper and pulp		
Organic chemicals		
Other (specify)		
	TR ($kg\ BOD\ 1000\ persons^{-1}$)	
Domestic		
Other		

Handling systems	Industrial wastewater treated (*)	Ind. sludge treated (*)	Domestic wastewater treated (*)	Domestic sludge treated (*)
Aerobic				
Anaerobic				
Other (specify)				

Documentation box

TABLE 7 OVERVIEW TABLE[1] FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)

Year :

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6		NO_x		CO		NMVOC		SO_2	
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality
Total National Emissions and Removals																				
1 Energy																				
A Fuel Combustion Activities																				
Reference Approach																				
Sectoral Approach																				
1 Energy Industries																				
2 Manufacturing Industries and Construction																				
3 Transport																				
4 Other Sectors																				
5 Other																				
B Fugitive Emissions from Fuels																				
1 Solid Fuels																				
2 Oil and Natural Gas																				
2 Industrial Processes																				
A Mineral Products																				
B Chemical Industry																				
C Metal Production																				
D Other Production																				
E Production of Halocarbons and SF_6																				

[1] This table is intended to be used by Parties to summarize their own assessment of completeness (e.g. partial, full estimate, not estimated) and quality (high, medium, low) of major source/sink inventory estimates. The latter could be understood as a quality assessment of the uncertainty of the estimates. This table might change once the IPCC completes its work on managing uncertainties of GHG inventories. The title of the table was kept for consistency with the current table in the IPCC Guidelines.

Note: To fill in the table use the notation key as given in the IPCC Guidelines (Volume 1, Reporting Instructions, Tables 1.7).

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)

Year :

(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6		NO_x		CO		NMVOC		SO_2	
	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality	Emissions	Quality
2 Industrial Processes (continued)																				
F. Consumption of Halocarbons and SF_6																				
Potential [1]																				
Actual [2]																				
G. Other																				
3 Solvent and Other Product Use																				
4 Agriculture																				
A. Enteric Fermentation																				
B. Manure Management																				
C. Rice Cultivation																				
D. Agricultural Soils																				
E. Prescribed Burning of Savannas																				
F. Field Burning of Agricultural Residues																				
G. Other																				
5 Land-Use Change and Forestry																				
A. Changes in Forest and Other Woody Biomass Stocks																				
B. Forest and Grassland Conversion																				

[1] Potential emissions based on Tier 1 approach of the IPCC Guidelines

[2] Actual emissions based on Tier 2 approach of the IPCC Guidelines

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)

Year :

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6		NO_x		CO		NMVOC		SO_2	
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality
5 Land-Use Change and Forestry (continued)																				
C. Abandonment of Managed Lands																				
D. CO_2 Emissions and Removals from Soil																				
E. Other																				
6 Waste																				
A. Solid Waste Disposal on Land																				
B. Wastewater Handling																				
C. Waste Incineration																				
D. Other																				
7 Other *(please specify)*																				
Memo Items:																				
International Bunkers																				
Aviation																				
Marine																				
Multilateral Operations																				
CO_2 Emissions from Biomass																				

Year :

TABLE 8(a) RECALCULATION - RECALCULATED DATA
Recalculated year:
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2			CH_4			N_2O		
		Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]
		CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)
Total National Emissions and Removals										
1. Energy										
1 A	Fuel Combustion Activities									
1 A 1	Energy Industries									
1 A 2	Manufacturing Industries and Construction									
1 A 3	Transport									
1 A 4	Other Sectors									
1 A 5	Other									
1 B	Fugitive Emissions from Fuels									
1 B 1	Solid fuel									
1 B 2	Oil and Natural Gas									
2. Industrial Processes										
2 A	Mineral Products									
2 B	Chemical Industry									
2 C	Metal Production									
2 D	Other Production									
2 G	Other									
3. Solvent and Other Product Use										
4. Agriculture										
4 A	Enteric Fermentation									
4 B	Manure Management									
4 C	Rice Cultivation									
4 D	Agricultural Soils [2]									
4 E	Prescribed Burning of Savannas									
4 F	Field Burning of Agricultural Residues									
4 G	Other									
5. Land-Use Change and Forestry (net)										
5 A	Changes in Forest and Other Woody Biomass Stocks									
5 B	Forest and Grassland Conversion									
5 C	Abandonment of Managed Lands									
5 D	CO_2 Emissions and Removals from Soil									
5 E	Other									

[1] Estimate the percentage change due to recalculation with respect to the previous submission (Percentage change = 100% x [(LS-PS)/PS], where LS = Latest submission and PS = Previous submission. All cases of recalculation of the estimate of the source/sink category should be addressed and explained in Table 8(b) of this common reporting format.

[2] See footnote 4 to Summary 1.A of this common reporting format.

TABLE 8(a) RECALCULATION - RECALCULATED DATA Year :

Recalculated year:

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2			CH_4			N_2O		
	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]
	CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)
6. Waste									
6.A. Solid Waste Disposal on Land									
6.B. Wastewater Handling									
6.C. Waste Incineration									
6.D. Other									
7. Other *(please specify)*									
Memo Items:									
International Bunkers									
Multilateral Operations									
CO_2 Emissions from Biomass									

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFCs			PFCs			SF_6		
	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]
	CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)
Total Actual Emissions									
2.C. Aluminium Production									
2.E. Production of Halocarbons and SF_6									
2.F. Consumption of Halocarbons and SF_6									
Other									
Potential Emissions from Consumption of HFCs/PFCs and SF_6									

	Previous submission	Latest submission	Difference[1]
	CO_2 equivalent (Gg)		(%)
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry [3]			
Total CO_2 Equivalent Emissions without Land-Use Change and Forestry [3]			

[3] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

TABLE 8(b) RECALCULATION - EXPLANATORY INFORMATION
(Sheet 1 of 1)

Year :

Specify the sector and source/sink category[1] where changes in estimates have occurred		GHG	RECALCULATION DUE TO			
			CHANGES IN			Addition/removal/ replacement of source/sink categories
			Methods [2]	Emission factors [2]	Activity data [2]	

[1] Enter the identification code of the source/sink category (e.g. 1.B.1) in the first column and the name of the category (e.g. Fugitive Emissions from Solid Fuels) in the second column of the table (see Table 8(a)).

[2] Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink as indicated in Table 8(a). Include relevant changes in the assumptions and coefficients under the "Methods" column.

Documentation box: Use the documentation box to report the justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory.

TABLE 9 COMPLETENESS

Year :

(Sheet 1 of 2)

Sources and sinks not reported (NE)[1]			
GHG	Sector[2]	Source/sink category [2]	Explanation
CO_2			
CH_4			
N_2O			
HFCs			
PFCs			
SF_6			

Sources and sinks reported elsewhere (IE)[3]				
GHG	Source/sink category	Allocation as per IPCC Guidelines	Allocation used by the Party	Explanation

[1] Please, clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source/sink category for which the indicator "NE" is entered in the sectoral tables.

[2] Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: Waste, source category: Wastewater Handling).

[3] Please clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector indicated in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason for reporting these sources and sinks in a different sector. An entry should be made for each source/sink for which the indicator "IE" is used in the sectoral tables.

TABLE 9 COMPLETENESS
(Sheet 2 of 2)

Year :

Additional GHG emissions reported[4]						
GHG	Source category	Emissions (Gg)	Estimated GWP value (100-year horizon)	Emissions CO_2 equivalent (Gg)	Reference to the data source of GWP value	Explanation

[4] Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Please include such gases in this table if they are considered in the submitted inventory. Provide additional information on the estimation methods used.

TABLE 10 EMISSIONS TRENDS (CO_2)

Year:

(Sheet 1 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils[2]										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry[3]										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other *(please specify)*										
Total Emissions/Removals with LUCF[4]										
Total Emissions without LUCF[4]										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

[1] Fill in the base year adopted by the Party under the Convention, if different from 1990.

[2] See footnote 4 to Summary 1.A of this common reporting format.

[3] Take the net emissions as reported in Summary 1.A of this common reporting format. Please note that for the purposes of reporting the signs for uptake are always (-) and for emissions (+).

[4] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO_2 emissions and removals from Land-Use Change and Forestry.

TABLE 10 EMISSIONS TRENDS (CH_4)
(Sheet 2 of 5)

Year:

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
Total Emissions										
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other *(please specify)*										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

TABLE 10 EMISSIONS TRENDS (N_2O)

Year:

(Sheet 3 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
Total Emissions										
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other *(please specify)*										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

TABLE 10 EMISSION TRENDS (HFCs, PFCs and SF_6) Year:

(Sheet 4 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
Emissions of HFCs[2] - CO_2 equivalent (Gg)										
HFC-23										
HFC-32										
HFC-41										
HFC-43-10mee										
HFC-125										
HFC-134										
HFC-134a										
HFC-152a										
HFC-143										
HFC-143a										
HFC-227ea										
HFC-236fa										
HFC-245ca										
Emissions of PFCs[2] - CO_2 equivalent (Gg)										
CF_4										
C_2F_6										
C_3F_8										
C_4F_{10}										
c-C_4F_8										
C_5F_{12}										
C_6F_{14}										
Emissions of SF_6[2] - CO_2 equivalent (Gg)										
SF_6										

[1] Enter information on the actual emissions. Where estimates are only available for the potential emissions, specify this in a footnote.

[2] Only in this row the emissions are expressed as CO_2 equivalent emissions in order to facilitate data flow among spreadsheets.

TABLE 10 EMISSION TRENDS (SUMMARY)

Year:

(Sheet 5 of 5)

GREENHOUSE GAS EMISSIONS	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	CO_2 equivalent (Gg)									
Net CO_2 emissions/removals										
CO_2 emissions (without LUCF) [6]										
CH_4										
N_2O										
HFCs										
PFCs										
SF_6										
Total (with net CO_2 emissions/removals)										
Total (without CO_2 from LUCF) [8]										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	CO_2 equivalent (Gg)									
1. Energy										
2. Industrial Processes										
3. Solvent and Other Product Use										
4. Agriculture										
5. Land-Use Change and Forestry [7]										
6. Waste										
7. Other										

[6] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO_2 emissions and removals from Land-Use Change and Forestry.

[7] Net emissions.

TABLE 11 CHECK LIST of REPORTED INVENTORY INFORMATION [1]

Party: **Year:**

Contact info	
Focal point for national GHG inventories	
Address	
Telephone	Fax: E-mail:
Main institution preparing the inventory	

General info	
Date of submission	
Base years	PFCs, HFCs, SF_6
Year(s) covered in the submission	
Gases covered	
Omissions in geographic coverage	

Tables	Energy	Ind. Processes	Solvent Use	LUCF	Agriculture	Waste
Sectoral report tables	☐	☐	☐	☐	☐	☐
Sectoral background data tables	☐	☐	☐	☐	☐	☐
Summary 1 (IPCC Summary tables)	IPCC Table 7A: ☐			IPCC Table 7B: ☐		
Summary 2 (CO_2 equivalent emissions)	☐					
Summary 3 (Methods Emission factors)	☐					
Uncertainty	IPCC Table 8A: ☐			National information: ☐		
Recalculation tables	☐					
Completeness table	☐					
Trend table	☐					

CO_2	Worksheet 1-1	Percentage of difference	Explanation of differences
Comparison of CO_2 from fuel combustion	☐	0.0000	☐

Recalculation	Energy	Ind Processes	Solvent Use	LUCF	Agriculture	Waste
CO_2	☐	☐	☐	☐	☐	☐
CH_4	☐	☐	☐	☐	☐	☐
N_2O	☐	☐	☐	☐	☐	☐
HFCs, PFCs, SF_6		☐				
Explanations	☐	☐	☐	☐	☐	☐
Recalculation tables for all recalculated years	☐					
Full CRF for the recalculated base year	☐					

HFCs, PFCs, SF_6	HFCs		PFCs		SF_6	
Disaggregation by species	☐		☐			
Production of Halocarbons/SF_6	☐		☐		☐	
Consumption of Halocarbons/SF_6	Actual	Potential	Actual	Potential	Actual	Potential
	☐	☐	☐	☐	☐	☐
Potential/Actual emission ratio						

Reference to National Inventory Report and/or national inventory web site	

CRF - Common Reporting Format
LUCF - Land-Use Change and Forestry

[1] For each omission, give an explanation for the reasons on a separate page attached to the check list.

II. GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

PART II:

UNFCCC REPORTING GUIDELINES ON NATIONAL COMMUNICATIONS

I. INTRODUCTION

A. Objectives

1. The objectives of these guidelines for preparing the national communication are:

(a) To assist Annex I Parties in meeting their commitments under Articles 4 and 12 of the Convention;

(b) To promote the provision of consistent, transparent, comparable, accurate and complete information in order to enable a thorough review and assessment of the implementation of the Convention by the Parties, and to monitor the progress Annex I Parties are making towards meeting the goals of the Convention; and

(c) To assist the Conference of the Parties (COP) to carry out its responsibilities to review the implementation of the Convention pursuant to Article 7.2(a) and the adequacy of the commitments in Article 4.2(a) and (b) in accordance with Article 4.2(d).

B. Structure

2. The information identified in these guidelines shall be communicated by a Party in a single document, 500 copies of which should be submitted to the COP through the secretariat, and shall be in one of the official languages of the United Nations. Parties may include a reference to a national focal point and/or web site where additional copies may be obtained. The length of a national communication may be decided by the submitting Party but every effort shall be made to avoid over-lengthy national communications, in order to reduce the paper burden and to facilitate the consideration process. Parties shall also provide an electronic version of their national communication to the secretariat.

3. Annex I Parties should also submit to the secretariat, where relevant, a translation of their national communication into English.

4. Parties should provide references to additional relevant background information in an annex to the national communication. Parties should also provide this information and other relevant background information to the secretariat on its request, preferably in English, or another official language of the United Nations.

5. To facilitate transparency, comparability and consistency of national communications, Parties shall structure their national communication following the outline contained in the annex to these guidelines. To ensure completeness, no mandatory element shall be excluded. If mandatory elements cannot be reported for any reason, Parties shall explain the omission or the reason for partial reporting in the section relating to that element.

6. Where statistical data are provided they should be accompanied by a definition of terms, unless they are obvious.

II. EXECUTIVE SUMMARY

7. A national communication shall include an executive summary that summarizes the information and data from the full document. The executive summary shall be of no more than 15 pages.

III. NATIONAL CIRCUMSTANCES RELEVANT TO GREENHOUSE GAS EMISSIONS AND REMOVALS

8. Parties shall provide a description of their national circumstances, how national circumstances affect greenhouse gas (GHG) emissions and removals, and how national circumstances and changes in national circumstances affect greenhouse gas emissions and removals over time. Parties should provide information about how their national circumstances are relevant to factors affecting greenhouse gas emissions and removals, including disaggregated indicators, to explain the relationship between national circumstances and emissions or removals. Parties may provide whatever information best describes their own national circumstances and historic trends. However, to improve comparability of national communications, the following headings are recommended:

(a) Government structure: for example, roles and responsibilities of different levels of government;

(b) Population profile: for example, total population, density and distribution;

(c) Geographic profile: for example, area, latitude, land-use and ecosystems;

(d) Climate profile: for example, temperature distribution, annual temperature variations, precipitation distribution, climate variability and extreme events;

(e) Economic profile: for example, gross domestic product (GDP), GDP per capita (expressed in domestic currency and purchasing parities), GDP by sector, international trade patterns;

(f) Energy (by fuel types where appropriate): for example, energy resource base, production, consumption, market structure, prices, taxes, subsidies, trade;

(g) Transportation: for example, modes (passenger and freight), travel distances, fleet characteristics;

(h) Industry: for example, structure;

(i) Waste: for example, waste sources, management practices;

(j) Building stock and urban structure: for example, profile of residential and commercial buildings;

(k) Agriculture: for example, structure, management practices;

(l) Forest: for example, types, management practices;

(m) Other circumstances.

Flexibility in accordance with Article 4.6 and 4.10

9. Parties requesting flexibility or consideration, in accordance with Article 4.6 and 4.10 of the Convention, shall state the type of special consideration they are seeking and provide a full explanation of their circumstances.

IV. GREENHOUSE GAS INVENTORY INFORMATION

A. Summary tables

10. Summary information from the national greenhouse gas inventory prepared according to part I of these guidelines shall be provided for the period from 1990 (or other base year) to the last but one year prior to the year of submission of the national communication (e.g. inventory information up to the year 1999 shall be provided in the third national communication to be submitted by 30 November 2001). The information provided in the national communication should be consistent with that provided in the annual inventory information submission of the year in which the national communication is submitted, and any differences should be fully explained.

11. For the purpose of the national communication, complete inventory information need not be provided. However, at a minimum, Parties shall report the summary, including carbon dioxide (CO_2) equivalent and emissions trend tables given in the common reporting format contained in the above-mentioned guidelines. These tables may be provided as an annex, as part of the national communication rather than in the main text.

B. Descriptive summary

12. In the main text of the national communication, Parties should provide a descriptive summary and should provide diagrams for the GHGs reported in the summary tables, in accordance with paragraph 11 above. Parties should provide a description of the factors underlying emission trends.

V. POLICIES AND MEASURES

A. Selection of policies and measures for the national communication

13. In accordance with Article 12.2, Annex I Parties shall communicate information on policies and measures adopted to implement commitments under Article 4.2(a) and (b). These need not have the limitation and reduction of GHG emissions and removals as a primary objective.

14. In reporting, Parties should give priority to policies and measures, or combinations of policies and measures, which have the most significant impact in affecting GHG emissions and removals and may also indicate those which are innovative and/or effectively replicable by other Parties. Parties may report on adopted policies and measures and those in the planning stage, but should clearly distinguish these from implemented policies and measures throughout.[1] The national communication does not have to report every policy and measure which affects GHG emissions.

15. Policies and measures reported on should be those planned, adopted and/or implemented by governments at national, state, provincial, regional and local level. Furthermore, policies and measures reported may also include those adopted in the context of regional or international efforts. Policies and measures influencing international transport GHG emissions should be reported in the transport sector.

16. Parties should report on action taken to implement commitments under Article 4.2(e)(ii) of the Convention, which requires that Parties identify and periodically update their own policies and practices which encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur. Parties should also provide the rationale for such actions in the context of their national communications.

---

[1] *Implemented policies and measures* are those for which one or more of the following applies: (a) national legislation is in force; (b) one or more voluntary agreements have been established; (c) financial resources have been allocated; (d) human resources have been mobilized. *Adopted policies and measures* are those for which an official government decision has been made and there is a clear commitment to proceed with implementation. *Planned policies and measures* are options under discussion and having a realistic chance of being adopted and implemented in future.

B. Structure of the policies and measures section of the national communication

17. Parties shall organize the reporting of policies and measures by sectors, subdivided by greenhouse gas (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride). To the extent appropriate, the following sectors should be considered: energy, transport, industry, agriculture, forestry and waste management. Each sector shall have its own textual description of the principal policies and measures, as set out in section D below, supplemented by table 1. Parties may include separate text and a table describing cross-sectoral policies and measures.

18. In cases where a policy or measure has been maintained over time and is thoroughly described in the Party's previous national communication, reference should be made to this and only a brief description contained in the latest national communication, focusing on any alterations to the policy or measure or effects achieved.

19. Some information such as the effect of policies and measures may be presented in aggregate for several complementary measures in a particular sector or affecting a particular gas.

C. Policy-making process

20. The national communication should describe the overall policy context, including any national targets for greenhouse gas mitigation. Strategies for sustainable development or other relevant policy objectives may also be covered. Relevant inter-ministerial decision-making processes or bodies may be noted.

21. The national communication should provide a description of the way in which progress with policies and measures to mitigate GHG emissions is monitored and evaluated over time. Institutional arrangements for monitoring of GHG mitigation policy should also be reported in this context.

D. Policies and measures and their effects

22. The presentation of each policy and measure shall include information on each of the subject headings listed below. The presentation should be concise and should include information on the detail suggested after each subject heading:

(a) *Name and short description of the policy or measure*;

(b) *Objectives of the policy or measure*. The description of the objectives should focus on the key purposes and benefits of the policies and measures, including a description of activities and/or source and sink categories affected. Objectives should be described in quantitative terms, to the extent possible;

(c) *The greenhouse gas or gases affected;*

(d) *Type or types of policy or measure.* Use, to the extent possible, the following terms: economic, fiscal, voluntary/negotiated agreements, regulatory, information, education, research, other;

(e) *Status of implementation.* It should be noted whether the policy or measure is in the planning stage or is adopted or whether it is under implementation. For adopted and implemented measures, additional information may include the funds already provided, future budget allocated and the time-frame for implementation;

(f) *Implementing entity or entities.* This should describe the role of national, state, provincial, regional and local government and the involvement of any other entities.

23. In addition, the description of each policy and measure reported should include, as appropriate, *a quantitative estimate of the impacts of individual policies and measures or collections of policies and measures.* Such information includes estimated changes in activity levels and/or emissions and removals due to adopted and implemented policies and measures reported and a brief description of estimation methods. Information should be presented as an estimate for a particular year such as 1995, 2000 and 2005, not for a period of years.

24. Parties may also provide information under the headings below for each policy and measure reported:

(a) *Information about the costs of policies and measures.* Such information should be accompanied by a brief definition of the term 'cost' in this context;

(b) *Information about non-GHG mitigation benefits of policies and measures.* Such benefits may include, for example, reduced emissions of other pollutants or health benefits;

(c) *How the policy or measure interacts with other policies and measures at the national level.* This may include a description of how policies complement each other in order to enhance overall greenhouse gas mitigation.

25. Parties shall provide information on how they believe their policies and measures are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention.

E. Policies and measures no longer in place

26. When policies and measures listed in previous national communications are no longer in place, Parties may explain why this is so.

Table 1. Summary of policies and measures by sector [a]

Name of policy or measure[b]	Objective and/or activity affected	GHG affected	Type of instrument	Status[c]	Implementing entity or entities	Estimate of mitigation impact, by gas (for a particular year, not cumulative, in CO_2 equivalent)[d]		
						1995	2000	2005

[a] Separate tables shall be completed for each sector, as set out in paragraph 17.

[b] Parties should use an asterisk (*) to indicate that a measure is included in the 'with measures' projection.

[c] To the extent possible, the following descriptive terms should be used: *implemented, adopted, planned.* Additional information may be provided on funding and the relevant time-scale.

[d] Parties may add columns for additional years (for example 2010, 2015, etc.).

VI. PROJECTIONS AND THE TOTAL EFFECT OF POLICIES AND MEASURES

A. Purpose

27. The primary objective of the projections section of the national communication is to give an indication of future trends in GHG emissions and removals, given current national circumstances and implemented and adopted policies and measures, and to give an indication of the path of emissions and removals without such policies and measures.

B. Projections

28. At a minimum, Parties shall report a 'with measures' projection, in accordance with paragraph 29 and may report 'without measures' and 'with additional measures' projections.

29. A '**with measures**' projection shall encompass currently implemented and adopted policies and measures. If provided, a '**with additional measures**' projection also encompasses planned policies and measures. If provided, a '**without measures**' projection excludes all policies and measures implemented, adopted or planned after the year chosen as the starting point for this projection. In reporting, Parties may entitle their 'without measures' projection as a 'baseline' or 'reference' projection, for example, if preferred, but should explain the nature of this projection.

30. Parties may report sensitivity analysis for any of the projections, but should aim to limit the number of scenarios presented.

C. Presentation of projections relative to actual data

31. Emission projections shall be presented relative to actual inventory data for the preceding years.

32. For the 'with measures' and 'with additional measures' projections, the starting point should generally be the latest year for which inventory data are available in the national communication. For the 'without measures' projection, the starting point may be 1995, or Parties may provide a 'without measures' projection starting from an earlier year such as 1990 or another base year, as appropriate.

33. Parties may use 'normalized' data in making their projections. However, Parties should present their projections relative to unadjusted inventory data for the preceding years. In addition, Parties may present their projections relative to adjusted inventory data. In this case, Parties shall explain the nature of the adjustments.

D. Coverage and presentation

34. Projections shall be presented on a sectoral basis, to the extent possible, using the same sectoral categories used in the policies and measures section.

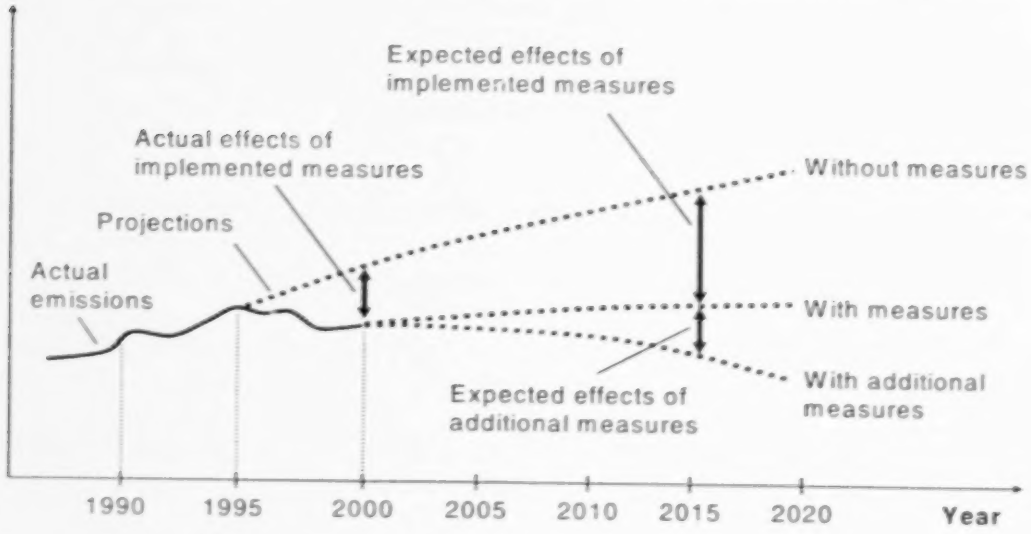
35. Projections shall be presented on a gas-by-gas basis for the following greenhouse gases: CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case). Parties may also provide projections of the indirect greenhouse gases carbon monoxide, nitrogen oxides and non-methane volatile organic compounds, as well as sulphur oxides. In addition, projections shall be provided in an aggregated format for each sector as well as for a national total, using global warming potential (GWP) values agreed upon by the Conference of the Parties.

36. To ensure consistency with inventory reporting, emissions projections related to fuel sold to ships and aircraft engaged in international transport shall, to the extent possible, be reported separately and not included in the totals.

37. In view of the objective of the Convention and the intent to modify longer-term trends in emissions and removals, Parties should include projections on a quantitative basis for the years 2005, 2010, 2015 and 2020. Projections should be presented in a tabular format by sector and gas for each of these years, together with actual data for the period 1990 to 2000 or the latest year available. For Parties using a base year different from 1990 for their inventories, in accordance with Article 4.6 of the Convention, actual data for that year shall be given.

38. Diagrams illustrating the information in paragraphs 34 to 37 should be presented showing unadjusted inventory data and a 'with measures' projection, for the period 1990 (or another base year, as appropriate) to 2020. Additional diagrams may also be presented. Figure 1 illustrates the presentation of a hypothetical Party's projection for a single gas. It shows unadjusted inventory data for the period 1990 to 2000. It shows 'with measures' and 'with additional measures' scenarios starting from 2000, and a 'without measures' scenario starting from 1995.

Figure 1: Hypothetical Party's projection for emissions of one gas



E. Assessment of aggregate effects of policies and measures

39. The estimated and expected effects of individual policies are addressed in the policies and measures section of the national communication. In the projections section of the national communication, Parties shall present the estimated and expected total effect of implemented and adopted policies and measures. Parties may also present the total expected effect of planned policies and measures.

40. Parties shall provide an estimate of the total effect of their policies and measures, in accordance with the 'with measures' definition, compared to a situation without such policies and measures. This effect shall be presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 equivalent basis), in 1995 and 2000, and should also be presented for 2005, 2010, 2015 and 2020 (not cumulative savings). This information may be presented in tabular format.

41. Parties may calculate the total effect of their measures by taking the difference between a 'with measures' and 'without measures' projection. Alternatively, Parties may use another approach, for example individually assessing the effect of each significant policy and measure, and aggregating the individual effects to arrive at a total. In either case, when reporting, it should be clear from what year onward it is assumed that policies are implemented or not implemented in making the calculations.

F. Methodology

42. When projecting greenhouse gas emissions and removals and estimating the total effects of policies and measures on emissions and removals, Parties may use any models and/or approaches they choose. Sufficient information should be reported in the national communication to allow a reader to obtain a basic understanding of such models and/or approaches.

43. In the interests of transparency, for each model or approach used, Parties should briefly:

(a) Explain for which gases and/or sectors the model or approach was used;

(b) Describe the type of model or approach used and its characteristics (for example, top-down model, bottom-up model, accounting model, expert judgement);

(c) Describe the original purpose the model or approach was designed for and, if applicable, how it has been modified for climate change purposes;

(d) Summarize the strengths and weaknesses of the model or approach used;

(e) Explain how the model or approach used accounts for any overlap or synergies that may exist between different policies and measures.

44. Parties should provide references for more detailed information related to (a) to (e) above.

45. Parties should report the main differences in the assumptions, methods employed, and results between projections in the current national communication and those in earlier national communications.

46. The sensitivity of the projections to underlying assumptions should be discussed qualitatively and, where possible, quantitatively.

47. To ensure transparency, Parties should report information about key underlying assumptions and values of variables such as GDP growth, population growth, tax levels and international fuel prices, using table 2. This information should be limited to that which is not covered under paragraph 48, i.e. it should not include sector-specific data.

Table 2. Summary of key variables and assumptions in the projections analysis

	Historic			Projected[2]			
	1990	1995	2000	2005	2010	2015	2020
Variable 1 (e.g. GDP growth)							
Variable 2 (e.g. world oil prices in US$/barrel)							

48. To provide the reader with an understanding of emission trends in the years 1990 to 2020, Parties shall present relevant information on factors and activities for each sector. This information on factors and activities may be presented in tabular format.

VII. VULNERABILITY ASSESSMENT, CLIMATE CHANGE IMPACTS AND ADAPTATION MEASURES

49. A national communication shall include information on the expected impacts of climate change and an outline of the action taken to implement Article 4.1(b) and (e) with regard to adaptation. Parties are encouraged to use the Intergovernmental Panel on Climate Change (IPCC) Technical Guidelines for Assessing Climate Change Impacts and Adaptations and the United Nations Environment Programme (UNEP) Handbook on Methods for Climate Change Impacts Assessment and Adaptation Strategies. Parties may refer, *inter alia*, to integrated plans for coastal zone management, water resources and agriculture. Parties may also report on specific results of scientific research in the field of vulnerability assessment and adaptation.

VIII. FINANCIAL RESOURCES AND TRANSFER OF TECHNOLOGY

50. In accordance with Article 12.3, Annex II Parties shall provide details of measures taken to give effect to their commitments under Article 4.3, 4.4, and 4.5, as follows.

51. Parties shall indicate what "new and additional" financial resources they have provided pursuant to Article 4.3. Parties shall clarify how they have determined such resources as being "new and additional" in their national communications. In communicating this information, Parties shall complete table 3.

---

[2] Parties may indicate with an asterisk where the data are not an output but have been assumed as an input to the emission projections.

52. Parties shall provide detailed information on the assistance provided for the purpose of assisting developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects, in textual format and with reference to table 5.

53. Parties shall provide any information on any financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. Parties should complete tables 4 and 5.

54. Parties shall, when reporting details of measures related to the promotion, facilitation and financing of the transfer of, or access to, environmentally-sound technologies, clearly distinguish between activities undertaken by the public sector and those undertaken by the private sector. As the ability of Parties to collect information on private sector activities is limited, Parties may indicate, where feasible, in what way they have encouraged private sector activities, and how these activities help meet the commitments of Parties under Article 4.3, 4.4 and 4.5 of the Convention.

55. Parties shall, where feasible, report activities related to technology transfer, including success and failure stories, using table 6 below. Parties shall also report their activities for financing access by developing countries to "hard" or "soft" environmentally-sound technologies.[3]

56. Parties shall report information, in textual format, on steps taken by governments to promote, facilitate and finance transfer of technology, and to support development and enhancement of endogenous capacities and technologies of developing countries.

---

[3] The term "transfer of technology", as used here, encompasses practices and processes such as "soft" technologies, for example, capacity-building, information networks, training and research, as well as "hard" technologies, for example, equipment to control, reduce or prevent anthropogenic emissions of greenhouse gases in the energy, transport, forestry, agriculture, and industry sectors, to enhance removals by sinks, and to facilitate adaptation.

Table 3. Financial contributions to the Global Environment Facility (GEF)[4]

	Contribution[5] (millions of US dollars)		
	1997	1998	1999 *
Global Environment Facility			

* Parties can report on the year 2000 if data are available.

---

[4] In filling out this table, Parties may wish to refer to contributions related to the implementation of the Convention.

[5] Parties may indicate their overall contribution to the GEF over a multi-year period.

Table 4. Financial contributions to multilateral institutions and programmes[6]

Institution or programme	Contribution[7] (millions of US dollars)		
	1997	1998	1999 *
Multilateral institutions: 1. World Bank 2. International Finance Corporation 3. African Development Bank 4. Asian Development Bank 5. European Bank for Reconstruction and Development 6. Inter-American Development Bank 7. United Nations Development Programme - specific programmes 8. United Nations Environment Programme - specific programmes 9. UNFCCC - Supplementary Fund 10. Other			
Multilateral scientific, technological and training programmes: 1. 2. 3. 4. 5.			

* Parties can report on the year 2000 if data are available.

[6] In filling out this table, Parties may wish to refer to contributions related to the implementation of the Convention.

[7] Parties may indicate their overall contribution to multilateral institutions over a multi-year period.

Table 5. Bilateral and regional financial contributions related to the implementation of the Convention, 1997[8]

(millions of US dollars)

	Mitigation						Adaptation		
Recipient country/region	Energy	Transport	Forestry	Agriculture	Waste management	Industry	Capacity-building	Coastal zone management	Other vulnerability assessments
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15. All other									

Similar tables shall be completed for 1998, 1999 and, if the information is available, for 2000.

[8] Parties may also wish to indicate separately their contribution to developing country Parties to enable the latter to comply with their obligations under Article 12.1.

Table 6. Description of selected projects or programmes that promoted practicable steps to facilitate and/or finance the transfer of, or access to, environmentally-sound technologies

Project / programme title:			
Purpose:			
Recipient country	**Sector**	**Total funding**	**Years in operation**
Description:			
Indicate factors which led to project's success:			
Technology transferred:			
Impact on greenhouse gas emissions/sinks (optional):			

IX. RESEARCH AND SYSTEMATIC OBSERVATION

57. Pursuant to Articles 4.1(g) and (h), 5 and 12.1(b), Annex I Parties shall communicate information on their actions relating to research and systematic observation.

58. The national communication shall address both domestic and international activities (for example, the World Climate Programme, the International Geosphere-Biosphere Programme, the Global Climate Observing System, and the IPCC). They shall also reflect action taken to support related capacity-building in developing countries.

59. Parties shall provide summary information on global climate observing system activities in accordance with paragraph 64 below. To guide reporting under section IX, parts A and C, Parties should refer to the detailed guidance provided in the UNFCCC reporting guidelines on global climate observing systems (contained herein, see pages 101-108).

60. The national communication should report, in summary form, on action taken. For example, the results of research studies or model runs or data analysis should not be included in this section.

A. General policy on and funding of research and systematic observation

61. Parties should provide information about general policy on and funding of research and systematic observation.

62. Parties should identify the opportunities for and barriers to free and open international exchange of data and information and report on action taken to overcome barriers.

B. Research

63. Parties should provide, *inter alia*, information on highlights, innovations and significant efforts made with regard to:

(a) Climate process and climate system studies, including paleoclimate studies;

(b) Modelling and prediction, including general circulation models;

(c) Research on the impacts of climate change;

(d) Socio-economic analysis, including analysis of both the impacts of climate change and response options;

(e) Research and development on mitigation and adaptation technologies.

C. Systematic observation

64. Parties should provide summary information on the current status of national plans, programmes and support for ground- and space-based climate observing systems, including long-term continuity of data, data quality control and availability, and exchange and archivin data in the following areas:

(a) Atmospheric climate observing systems, including those measuring atmospher constituents;

(b) Ocean climate observing systems;

(c) Terrestrial climate observing systems;

(d) Support for developing countries to establish and maintain observing systems, related data and monitoring systems.

X. EDUCATION, TRAINING AND PUBLIC AWARENESS

65. In accordance with Articles 4.1(i), 6 and 12.1(b), Annex I Parties shall communicat information on their actions relating to education, training and public awareness. In this sect Parties should report, *inter alia*, on public information and education materials, resource or information centres, training programmes, and participation in international activities. Partie may report the extent of public participation in the preparation or domestic review of the nati communication.

66. The national communication may present information on such aspects as:

(a) General policy toward education, training and public awareness;
(b) Primary, secondary and higher education;
(c) Public information campaigns;
(d) Training programmes;
(e) Resource or information centres;
(f) Involvement of the public and non-governmental organizations;
(g) Participation in international activities.

XI. UPDATING OF THE GUIDELINES

67. These guidelines for national communications shall be reviewed and revised, as appropriate, in accordance with decisions of the Conference of the Parties on this matter.

Annex to the UNFCCC reporting guidelines on national communications

STRUCTURE OF THE NATIONAL COMMUNICATION

I. EXECUTIVE SUMMARY

II. NATIONAL CIRCUMSTANCES RELEVANT TO GREENHOUSE GAS EMISSIONS AND REMOVALS

Flexibility in accordance with Article 4.6 and 4.10

III. GREENHOUSE GAS INVENTORY INFORMATION

A. Summary tables (or as an annex to the national communication)

B. Descriptive summary

IV. POLICIES AND MEASURES

A. Policy-making process

B. Policies and measures and their effects

Table 1

C. Policies and measures no longer in place

V. PROJECTIONS AND THE TOTAL EFFECT OF POLICIES AND MEASURES

A. Projections

Diagrams

B. Assessment of aggregate effects of policies and measures

C. Methodology

Table 2

VI. VULNERABILITY ASSESSMENT, CLIMATE CHANGE IMPACTS AND ADAPTATION MEASURES

A. Expected impacts of climate change

B. Vulnerability Assessment

C. Adaptation measures

VII. FINANCIAL RESOURCES AND TRANSFER OF TECHNOLOGY

A. Provision of 'new and additional' resources

B. Assistance to developing country Parties that are particularly vulnerable to climate change

C. Provision of financial resources

D. Activities related to transfer of technology

Tables 3 - 6

VIII. RESEARCH AND SYSTEMATIC OBSERVATION

A. General policy on research and systematic observation

B. Research

C. Systematic observation

IX. EDUCATION, TRAINING AND PUBLIC AWARENESS

III. UNFCCC REPORTING GUIDELINES ON GLOBAL CLIMATE CHANGE OBSERVING SYSTEMS

I. INTRODUCTION

A. Objective

1. The purpose of these guidelines for reporting on global climate observing systems for Annex I and, as appropriate, non-Annex I Parties to the Convention, is to assist Parties in reporting their actions with regard to global climate observing systems, development of observational networks and, as appropriate, support for non-Annex I Parties to the Convention, as defined in Articles 4.1(g) and (h), 5 and 12.1(b) of the Convention.

B. Structure

2. The information identified in these guidelines shall be communicated by the Party in a single document and submitted to the Conference of the Parties through the secretariat, and shall be in one of the official languages of the United Nations. Parties may include a reference to a national focal point and/or web site where additional copies may be obtained. The length of the report may be decided by the submitting Party but every effort shall be made to avoid over-lengthy reports. Parties also should provide an electronic version of their reports to the secretariat.

II. REPORTING

A. General approach to systematic observation

3. Parties shall describe the status of their national programme for systematic observation to meet the needs for meteorological, atmospheric, oceanographic and terrestrial observations of the climate system as identified by the Global Climate Observing System (GCOS)[1] and its partner programmes in line with Article 5 of the Convention. A list of the technical acronyms used in these guidelines is given in appendix 1.

---

[1] As agreed by the responsible agencies (World Meteorological Organization (WMO), Intergovernmental Oceanographic Commission (IOC) of UNESCO, United Nations Environment Programme (UNEP) and International Council for Science (ICSU)), the GCOS is made up of the climate observing components of the World Weather Watch (WWW), Global Atmosphere Watch (GAW), World Hydrological Cycle Observing System (WHYCOS), Global Ocean Observing System (GOOS), Global Terrestrial Observing System (GTOS), and relevant observation systems established under the World Climate Research Programme (WCRP) and the International Geosphere-Biosphere Programme (IGBP).

4. In describing their national programme, Parties should, where relevant, report on the following:

(a) Existing national plans and their availability, the time frame for their implementation and specific commitments to address GCOS requirements;[2] Parties should also list and describe the responsibilities of the ministries and agencies, including space agencies, responsible for implementing the plans;

(b) Parties may, if they so wish, provide additional information to that sought in the guidelines, including maps of networks and participation in other relevant programmes, such as the Integrated Global Observing Strategy (IGOS).

5. Parties should describe the extent to which national data on systematic observations are exchanged with other Parties and provided to international data centres. Parties should describe any barriers to the exchange of data or provision of data to international data centres. Parties should, as necessary, describe any national policy or guidance relevant to the exchange of data relevant to meeting the needs of the UNFCCC.

6. Parties should describe actual and/or planned activities for capacity-building in developing countries related to collection, exchange and/or utilization of data to meet local, regional and international needs.

7. Parties should describe actual and/or planned actions since the publication of the previous national communication to strengthen international and intergovernmental programmes related to global climate observing systems.

8. Where information required in these guidelines cannot be provided, Parties should report on any difficulties encountered, needs that should be met to facilitate improved reporting, and steps taken to improve availability of information.

B. Meteorological and atmospheric observation

9. Parties shall, to the extent possible, describe their participation in GCOS, through their provision of meteorological and atmospheric observations including: the GCOS Surface Network

---

[2] Plan for the Global Climate Observing System (GCOS), Version 1.0, May 1995 GCOS-14 (WMO/TD-No. 681).

(GSN),[3] GCOS Upper Air Network (GUAN)[4] and Global Atmosphere Watch (GAW).[5] Parties should describe to what extent the observations correspond to the GCOS/GOOS/GTOS climate monitoring principles (appendix 2) and relevant best practices.[6]

10. In describing their national programmes, Parties should, where relevant, report on the following: international data exchange; the provision of metadata to the World Data Centres; and participation in, and support for, international quality control and archiving programmes.

11. Parties should, in order to facilitate integration of national reports, complete table 1.

Table 1. Participation in the global atmospheric observing systems

	GSN	GUAN	GAW	Other*
How many stations are the responsibility of the Party?				
How many of those are operating now?				
How many of those are operating to GCOS standards now?				
How many are expected to be operating in 2005?				
How many are providing data to international data centres now?				

* Provide brief details

---

[3] Initial selection of a GCOS Surface Network, February 1997. GCOS-34 (WMO/TD No. 799). See also http://www.wmo.ch/web/gcos/gcoshome.html for details of GSN and GUAN requirements.

[4] Report of the GCOS Atmospheric Observation Panel, second session. Tokyo, 1995. GCOS-17 (WMO/TD No. 696) See also http://www.wmo.ch/web/gcos/gcoshome.html for details of GSN and GUAN documents.

[5] GAW requirements are specified by the WMO Executive Council Panel of Experts on Environmental Pollution and Atmospheric Chemistry and its best practices are guided by GAW Quality Assurance/Science Activity Centres and calibration centres. See also http://www.wmo.ch/web/arep/gaw_home.html.

[6] GSN and GUAN best practices are given in the WMO Manual on the Global Observing System, sections 2.10.3.17 and 2.10.4.9 respectively.

C. Oceanographic observations

12. Parties shall, where relevant and to the extent possible, describe their participation in GCOS and GOOS through their provision of oceanographic observations[7] including, for example, sea surface temperature, sea level, temperature and salinity profiles, energy and carbon flux data. Parties should describe to what extent the observations correspond to the GCOS/GOOS/GTOS climate monitoring principles (appendix 2) and other relevant best practices.

13. In describing their national programmes, Parties should, where relevant, report on the following: international data exchange; and their participation in, and support for, international quality control and archiving programmes.

14. Parties should, in order to facilitate integration of national reports, complete table 2.

Table 2. Participation in the global oceanographic observing systems

	VOS	SOOP	TIDE GAUGES	SFC DRIFTERS	SUB-SFC FLOATS	MOORED BUOYS	ASAP
For how many platforms is the Party responsible?							
How many are providing data to international data centres?							
How many are expected to be operating in 2005?							

Note: See appendix 1 for explanation of acronyms.

---

[7] The GOOS 1998. *IOC1998/IOC, Paris*. See also http://ioc.unesco.org/goos/act_pl.htm for details of ocean observation requirements and for guidance on best practices.

D. Terrestrial observations

15. Parties should describe their participation in GCOS and GTOS programmes for terrestrial observations[8] including the Global Terrestrial Network - Glaciers (GTN-G),[9] Global Terrestrial Network - Permafrost (GTN-P),[10] and the Global Terrestrial Network - Carbon (FLUXNET),[11] and other networks monitoring land-use, land cover, land-use change and forestry, fire distribution, CO_2 flux, and snow and ice extent. Additionally, a general description of programmes for hydrological systems should be given. Parties should describe to what extent the observations correspond to the GCOS/GOOS/GTOS climate monitoring principles (appendix 2) and relevant best practices.

16. In describing their national programmes, Parties should, where relevant, report on the following: international data exchange; the provision of metadata for these networks; and participation in international quality control and archiving programmes, including hosting international archiving and/or quality assurance and quality control centres.

17. Parties should, in order to facilitate integration of national reports, complete table 3.

Table 3. Participation in the global terrestrial observing systems

	GTN-P	GTN-G	FLUXNET	Other
How many sites are the responsibility of the Party?				
How many of these are operating now?				
How many are providing data to international data centres now?				
How many are expected to be operating in 2005?				

---

[8] GCOS/GTOS Plan for Terrestrial Climate-related Observations, version 2.0. June 1997. GWS-32 (WMO/TD No 796). See also http://www.wmo.ch/web/gcos/pubs/tops2_1.html# contents for a general outline of terrestrial observations requirements.

[9] Report of GCOS/GTOS Terrestrial Observation Panel for Climate (TOPC). Birmingham, July 1999. See http://www.geo.unizh.ch/wgms/ for guidance on GTN-G requirements and best practices.

[10] See http://www.geography.uc.edu/~kenhinke/CALM/ for guidance on GTN-P requirements and best practices.

[11] Report of GCOS/GTOS Terrestrial Observation Panel for Climate (TOPC). Birmingham, July 1999. See http://www-eosdis.ornl.gov/FLUXNET/fluxnet.html for guidance on FLUXNET requirements and best practices.

E. Space-based observing programmes[12]

18. Parties should, where relevant, provide information on their participation in national international space-based observing programmes or programmes using satellite data to deriv climate-related information.

19. Parties should include the following information: summary description of space seri missions, and/or instruments; mechanisms for access to data and products by international programmes in relation to climate change; mechanisms for archiving, quality assurance and quality control; major domains of applications (atmosphere, ocean, terrestrial); and prospect long-term continuity, including expected overall lifetime of observational programme. Part should describe to what extent the observations correspond to the GCOS/GOOS/GTOS clim monitoring principles (appendix 2) and relevant best practices.

20. Where space activities are undertaken jointly with other Parties or multinational bod Parties should either list participating Parties or should refer to the report of another Party in which the information can be found.

21. Parties should include in their reports information on climate-related space activities which the private sector is partly or wholly involved.

---

[12] Refer to GCOS-15 (WMO/*TD No 685*). The GCOS Plan for Space-based Observations, Version 1.0, J 1995 (GCOS-15) is available at http://www.wmo.ch/web/gcos/publist2.html#plan while GCOS space-based observations requirements can be found by specifying GCOS as the user in http://sat.wmo.ch/stations/_asp_htx_idc/Requirementsearch.asp.

Appendix I

DEFINITION OF ACRONYMS USED IN THE GUIDELINES

ASAP	Automated Shipboard Aerological Programme
FLUXNET	Global Terrestrial Network - Carbon
GAW	Global Atmosphere Watch of WMO
GCOS	Global Climate Observing System
GOOS	Global Ocean Observing System
GSN	GCOS Surface Network
GTN-G	Global Terrestrial Network - Glaciers
GTN-P	Global Terrestrial Network - Permafrost
GTOS	Global Terrestrial Observation System
GUAN	GCOS Upper Air Network
ICSU	International Council for Science
IGBP	International Geosphere-Biosphere Programme
IGOS	Integrated Global Observing Strategy
IOC	Intergovernmental Oceanographic Commission of UNESCO
SFC Drifters	Surface Drifters
SOOP	Ship of Opportunity Programme
Sub-SFC	Sub-surface
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
VOS	Volunteer Observing Ship
WCRP	World Climate Research Programme
WHYCOS	World Hydrological Cycle Observing System
WMO	World Meteorological Organization
WWW	World Weather Watch of WMO

Appendix 2

GCOS/GOOS/GTOS CLIMATE MONITORING PRINCIPLES[1]

Effective monitoring systems for climate should adhere to the following principles:

1. The impact of new systems or changes to existing systems should be assessed prior implementation.

2. A suitable period of overlap for new and old observing systems should be required.

3. The results of calibration, validation, data homogeneity assessments and assessmen algorithm changes should be treated with the same data.

4. A capability to routinely assess the quality and homogeneity, including high-resolut data and related descriptive information of data on extreme events should be ensured.

5. Consideration of environmental climate-monitoring products and assessments, such IPCC assessments, should be integrated into national, regional and global observing priorit

6. Uninterrupted station operations and observing systems should be maintained.

7. A high priority should be given to additional observations in data-poor regions and regions sensitive to change.

8. Long-term requirements should be specified to network designers, operators and instrument engineers at the outset of new system design and implementation.

9. The carefully planned conversion of research observing systems to long-term opera should be promoted.

10. Data management systems that facilitate access, use and interpretation should be inc as essential elements of climate monitoring systems.

---

[1] GCOS-39 (WMO/TD-No.87) (UNEP/DEIA/MR.97-8) (GOOS-11) (GTOS-11) Report of the GCOS/GOOS/GTOS Panel, Third session (Tokyo, Japan, 15-18 July, 1997).

IV. UNFCCC GUIDELINES FOR THE TECHNICAL REVIEW OF GREENHOUSE GAS INVENTORIES FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION (GREENHOUSE GAS REVIEW GUIDELINES)

A. Objective

1. The objective of these guidelines is to promote consistency in the review of annual greenhouse gas (GHG) inventories of Annex I Parties and to establish a process for a thorough and comprehensive technical assessment of inventories. This process, comprising a number of stages, should increase Parties' confidence in greenhouse gas inventories. Each stage of the technical review process considers different aspects of the inventories to varying extents, in such a way that all of the purposes described below are achieved by the end of the process.

B. Purposes of the technical review of greenhouse gas inventories

2. The purposes of the technical review of Annex I Parties' greenhouse gas inventories are:

(a) To ensure that the Conference of the Parties (COP) has adequate information on GHG inventories and GHG emission trends;

(b) To examine in a facilitative, open and transparent manner the quantitative and qualitative information submitted by Annex I Parties in accordance with the UNFCCC reporting guidelines on annual inventories for consistency with those guidelines and to provide the COP with a thorough technical assessment of the implementation of Annex I Parties' commitments under Articles 4.1(a) and 12.1(a) of the Convention;

(c) To gain experience relevant to the preparation of guidelines related to Articles 5, 7 and 8 of the Kyoto Protocol;

(d) To assist Annex I Parties in improving the quality of their GHG inventories.

C. General approach

3. The technical review process comprises three stages:

(a) Initial check of annual inventories;

(b) Synthesis and assessment of annual inventories; and

(c) Expert review of individual inventories (individual review).

4. The stages of the technical review process complement each other so that, in general, for each Party, a stage is concluded before the next one is undertaken.

5. At all stages of the inventory review process, the secretariat will provide individual Parties with the opportunity to clarify issues or provide additional information. The Parties wi also be sent drafts of their status report, the relevant country section of the synthesis and assessment report and their individual inventory report. Every effort will be made to reach agreement with the Party on the content of a report prior to its publication. In the case of a Par and the expert team being unable to agree on an issue, the Party may provide explanatory text t be included in a separate section of the report.

D. Initial check of annual inventories

6. The purpose of the initial check conducted by the secretariat is to determine promptly whether the information provided is complete and in the correct format to enable subsequent review stages to occur, and to communicate this determination to Parties.

7. The initial checks cover the national inventory submission and, in particular, the data electronically submitted in the common reporting format.

8. The initial checks will:

(a) Indicate the date of receipt by the secretariat;

(b) Identify if the submission was received in both hard-copy and electronic format that permits the review to be conducted;

(c) Determine whether the submission is complete and that information has been provided in the correct format as called for in the UNFCCC reporting guidelines on annual inventories;

(d) Identify any gaps in the data or documentation.

9. The assessment of completeness, according to 8 (c) above, will determine whether:

(a) All sources, sinks and gases included in the 1996 IPCC Guidelines for National Greenhouse Gas Inventories are reported and any gaps are explained;

(b) Methodologies are documented;

(c) Estimates for summary totals and individual source categories are provided in mass units and in CO_2 equivalent using the IPCC 1995 global warming potential (GWP) value

(d) Total emissions estimates are provided for all required years (i.e. from the base year to the year of the current submission);

(e) Unadjusted emission estimates are reported;

(f) Estimates for CO_2 emissions from fossil fuel combustion are reported using the IPCC reference approach in addition to estimates derived using national methods;

(g) Estimates for hydrofluorocarbon, perfluorocarbon and sulphur hexafluoride emissions are reported by individual chemical species;

(h) Any recalculations are reported for the entire time series with transparent documentation.

10. The results of initial checks covering the elements listed in paragraph 8 above will be published on the UNFCCC web site as a status report for each Annex I Party, mainly in a tabular format, within four weeks of the date of receipt of the submission by the secretariat.

E. Synthesis and assessment of greenhouse gas inventories

11. The purposes of the synthesis and assessment of Annex I Parties' greenhouse gas inventories are to facilitate the consideration of inventory data and other information across Parties, and to identify issues for further consideration during the review of individual inventories.

12. The synthesis and assessment will cover the national inventory submission, any additional information submitted by Annex I Parties and previous national inventory submissions, where relevant.

13. The synthesis and assessment will be conducted annually by the secretariat in two phases, with the assistance of experts selected for the second phase.

14. The results of this stage of the technical review will be published on the UNFCCC web site as a synthesis and assessment report, divided into two sections and an addendum. The first section will provide information allowing comparisons across Annex I Parties and describe common methodological issues. The second section will contain a preliminary analysis of individual Annex I Party inventories, in particular, to identify outstanding issues requiring clarification during the individual review stage of the process. The addendum will contain tables and graphs based on Annex I Party inventory data.

15. The first section of the synthesis and assessment would compile and compare information across Parties, including, *inter alia*:

(a) Implied emission factors, default values and ranges contained in the 1996 IPCC Guidelines;

(b) Methodologies used in the preparation of the inventories;

(c) Estimates of CO_2 emissions from fuel combustion using the IPCC reference approach;

(d) Estimates of actual and potential emissions of hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride;

(e) Inventory recalculations and consistency of time series;

(f) Any recurring problems with reporting.

16. Section two of the synthesis and assessment would, for each individual inventory, *inter alia*:

(a) Compare emissions or removal estimates, activity data, implied emission factors and any recalculations with data from previous submissions to identify, to the extent possible, any irregularities or inconsistencies;

(b) Compare activity data with relevant external authoritative sources, if feasible, and identify any inconsistencies;

(c) Examine whether any *good practice*, when adopted by the COP, is documented and identify areas where it is not;

(d) Based on the above activities, identify source or sink categories requiring further consideration or clarification during the individual review stage;

(e) Assess the availability of documentation on national self-verification procedures or independent review in the technical review process;

(f) Assess the consistency of information on methodologies and emission factors in the common reporting format with related information in the national inventory report.

17. The addendum will compile and tabulate aggregate information and trends concerning greenhouse gas emissions by sources and removals by sinks for all gases and sources, and any other inventory information.

F. Review of individual greenhouse gas inventories

18. The purpose of the review of individual greenhouse gas inventories is to provide for a periodic detailed examination of the inventory estimates and procedures and methodologies used in the preparation of inventories, and to communicate the results to Parties.

19. Individual reviews will be carried out by teams of nominated experts, coordinated by the secretariat. The individual review will cover the Annex I Party's national inventory submission, supplementary material submitted by the Party and, as appropriate, previous inventory submissions. The expert team will consider the 'paper trail' of an inventory from the collection of data to the reported emission estimate.

20. During the trial period the following three operational approaches for the individual review and their possible combinations, will be tested: sending inventory information to experts, expert meetings in a single location and in-country visits of experts.

21. The individual review would, *inter alia*:

(a) Examine procedures and institutional arrangements for inventory development and management;

(b) Assess the extent to which issues and questions raised during previous review stages have been addressed and resolved;

(c) Examine departures from the requirements of the IPCC 1996 Guidelines and the UNFCCC reporting guidelines on annual inventories;

(d) Assess the extent to which the guidance on *good practice* is used, when adopted by the COP, in particular noting the:

(i) Selection and use of methodologies and assumptions;
(ii) Development and selection of emission factors;
(iii) Collection and selection of activity data;
(iv) Recalculations of previously submitted inventory data;
(v) Reporting of methodologies used for estimating uncertainties; and
(vi) Inventory quality assurance and quality control procedures;

(e) Examine data and the application of methodologies for source and sink categories identified during the second phase of the synthesis and assessment;

(f) Examine record-keeping and documentation procedures;

(g) Identify areas for further improvement of the inventories; and

(h) Note possible ways in which to improve methodologies and reporting of inve information.

22. The expert team will produce an individual inventory review report for publication in both hard-copy and electronic format based, *inter alia*, on the results of the tasks listed in paragraph 21 above. The individual inventory review report, in general, should not exceed 25 pages.

tory

Annex

Decision 3/CP.5

Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories

The Conference of the Parties,

Recalling the relevant provisions of the United Nations Framework Convention on Climate Change, in particular Article 4, Article 10.2 and Article 12,

Recalling its decision 3/CP.1 on preparation and submission of national communications from Parties included in Annex I to the Convention, 4/CP.1 on methodological issues, 9/CP.2 on communications from Parties included in Annex I to the Convention: guidelines, schedule and process for consideration and 11/CP.4 on national communications from Parties included in Annex I to the Convention,

Recognizing that anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol should be reported in a transparent, consistent, comparable, complete and accurate way,

Noting that the revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention, annexed to decision 9/CP.2, need to be updated to improve the transparency, consistency, comparability, completeness and accuracy of the reported national greenhouse gas inventories and other information,

Noting the ongoing process of improvement in guidance to Parties on the reporting of greenhouse gases inventories, in particular the work of the Intergovernmental Panel on Climate Change related to good practice in national inventory preparation, including managing uncertainty,

1. *Adopts* the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories;

2. *Decides* that Parties included in Annex I to the Convention should use these UNFCCC guidelines on annual inventories for reporting inventories due by 15 April each year, beginning in the year 2000;

3. *Invites* Parties included in Annex I to the Convention to submit separately, by 1 July 2001, information to the secretariat on experiences with using these guidelines, in particular the common reporting format, in the years 2000-2001;

4. *Requests* the secretariat to prepare a report on the use of these guidelines, in particular the common reporting format, taking into account, *inter alia*, experiences gained by Parties in using the guidelines, and by the secretariat in processing the common reporting format, and input from the Intergovernmental Panel on Climate Change, for consideration by the Subsidiary Body for Scientific and Technological Advice at its fifteenth session in considering possible revisions to these guidelines;

5. *Decides* that revisions to these guidelines, particularly the common reporting format, shall be considered by the Subsidiary Body for Scientific and Technological Advice at its fifteenth session with a view to submitting a decision for adoption by the Conference of the Parties at its seventh session.

9th plenary meeting
4 November 1999

Decision 4/CP.5

Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications

The Conference of the Parties,

Recalling the relevant provisions of the United Nations Framework Convention on Climate Change, in particular Articles 4, 6, 7.2, 9.2(b), 10.2, and 12 thereof,

Recalling its decisions 9/CP.2 and 11/CP.4 on national communications from Parties included in Annex I to the Convention,

Having considered the relevant recommendations of the Subsidiary Body for Scientific and Technological Advice and of the Subsidiary Body for Implementation,

Noting that the revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention annexed to decision 9/CP.2 need to be updated to improve the transparency, consistency, comparability, completeness and accuracy of the information reported,

1. *Adopts* the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications;

2. *Decides* that Parties included in Annex I to the Convention (Annex I Parties) should use Part II of the UNFCCC reporting guidelines for the preparation of their third national communications due by 30 November 2001, in accordance with decision 11/CP.4;

3. *Requests* Annex I Parties to provide a detailed report on their activities in relation to systematic observation, in accordance with the UNFCCC reporting guidelines on global climate observing systems adopted by decision 5/CP.5, in conjunction with their national communications;

4. *Urges* those Annex I Parties that have not submitted their first or second national communications, including those that were included in Annex I by decision 4/CP.3, to do so as soon as possible;

5. *Urges* Parties included in Annex II to the Convention to assist Annex I Parties with economies in transition, through appropriate bilateral or multilateral channels, with technical aspects of the preparation of national communications.

9th plenary meeting
4 November 1999

Decision 5/CP.5

Research and systematic observation

The Conference of the Parties,

Recalling Articles 4.1(g), 4.1(h) and 5 of the United Nations Framework Convention on Climate Change,

Recalling also its decisions 8/CP.3, 2/CP.4, and 14/CP.4,

1. *Recognizes* the need to identify the priority capacity-building needs related to participation in systematic observation;

2. *Invites* the secretariat of the Global Climate Observing System, in consultation with relevant regional and international bodies, including the Global Environment Facility, to organize regional workshops on this issue;

3. *Urges* Parties to actively support and participate in these regional workshops;

4. *Invites* the secretariat of the Global Climate Observing System to continue to assist and facilitate the establishment of an appropriate intergovernmental process to identify the priorities for action to improve global observing systems for climate and options for their financial support;

5. *Requests* the secretariat of the Global Climate Observing System to report on this matter to the Subsidiary Body for Scientific and Technological Advice at its twelfth session;

6. *Urges* Parties to address deficiencies in the climate observing networks and invites them, in consultation with the secretariat of the Global Climate Observing System, to bring forward specific proposals for that purpose and to identify the capacity-building needs and funding required in developing countries to enable them to collect, exchange and utilize data on a continuing basis in pursuance of the Convention;

7. *Adopts* the UNFCCC reporting guidelines on global climate observing systems;

8. *Invites* all Parties to provide detailed reports on systematic observation in accordance with these guidelines, for Parties included in Annex I to the Convention in conjunction with their national communications, pursuant to decision 4/CP.5, and on a voluntary basis for Parties not included in Annex I;

9. *Invites* the Convention secretariat, in conjunction with the secretariat of the Global Climate Observing System, to develop a process for synthesizing and analysing the information submitted in accordance with the UNFCCC reporting guidelines on global clima observing systems.

9th plenary me
4 November

Decision 6/CP.5

Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention

The Conference of the Parties,

Recalling the relevant provisions of the United Nations Framework Convention on Climate Change, in particular Articles 4 and 7 thereof,

Recalling its decision 11/CP.4 on national communications from Parties included in Annex I to the Convention,

Having considered the relevant recommendations of the Subsidiary Body for Implementation,

Recognizing the need to enhance the in-depth review of greenhouse gas inventories,

1. *Adopts* for a trial period covering inventory submissions due in 2000 and 2001 the guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention;

2. *Requests* the secretariat to conduct annual initial checks and an annual synthesis and assessment of greenhouse gas inventories for all Parties included in Annex I to the Convention (Annex I Parties) beginning in 2000, in accordance with the above-mentioned guidelines for the technical review;

3. *Requests* the secretariat to conduct, during the trial period, individual reviews of the greenhouse gas inventories for a limited number of Annex I Parties which have volunteered to be reviewed, in accordance with the above-mentioned guidelines for the technical review;

4. *Requests* the secretariat to use different approaches to individual reviews by coordinating specifically:

(a) Five to seven desk reviews per year and two centralized reviews per year, each covering five to ten inventories, and

(b) Three or four in-country reviews per year;

5. *Requests* the secretariat to produce a report on the technical reviews, assessing, *inter alia*, the advantages and disadvantages of different approaches, including human and

financial resource requirements, for consideration by the Subsidiary Body for Implementation (SBI) as soon as practicable after the end of the trial period;

6. *Requests* the SBI to evaluate, on the basis of the secretariat report, the experience with the technical review, with a view to adopting revised guidelines for the technical review of inventories at the eighth session of the Conference of the Parties;

7. *Invites* Annex I Parties which are in a position to do so to volunteer to subject their inventories to an individual review during the trial period and to designate a government focal point for the coordination of the review;

8. *Urges* Annex I Parties to facilitate the review of their inventories by responding to the secretariat's requests for additional information or comments in a timely manner;

9. *Encourages* Parties to ensure that experts participating in the technical review of inventories have adequate time and, as appropriate, financial support to participate in the reviews;

10. *Requests* the secretariat to report to the SBI, at its thirteenth session, on progress with the implementation of this decision;

11. *Decides* to initiate the individual review of inventories for all Annex I Parties in 2003.

9th plenary meeting
4 November 1999